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2nd Edition

JVC Service Manual

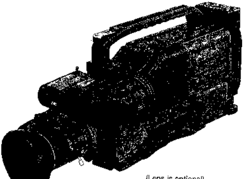
3-CCD COLOR VIDEO CAMERA
WITH S-VHS RECORDER

MODEL GY-X2

VICTOR COMPANY OF JAPAN, LIMITED

No. 60075R
2nd Edition

JVC Service Manual



(Lens is optional)

MODEL GY-X2

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JVC Instructions

3-CCD COLOR VIDEO CAMERA WITH S-VHS VTR

GY-X2

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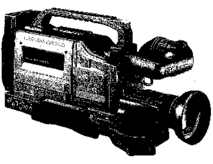

The photograph shows the GY-X2 video camera with an optional lens (YH13X7.5K12).

For Customer Use:
Enter below the Serial No. which is located on the top frame. Retain this information for future reference.

Model No. GY-X2

Serial No.

WARNINGS

CAUTION
RISK OF ELECTRIC SHOCK.
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Due to design modifications, data given in this instruction book are subject to possible change without prior notice.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

AVERTISSEMENT:
POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.

LITHIUM BATTERY REPLACEMENT MARKING
REPLACE BATTERY WITH MATSUSHITA ELECTRIC (OR PANASONIC) CR2025. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.

LITHIUM BATTERY DISPOSAL MARKING
WARNING – THE BATTERY USED IN THIS DEVICE MAY PRESENT A FIRE OR CHEMICAL BURN HAZARD IF MISUSED. DO NOT RECHARGE, DISASSEMBLE, HEAT ABOVE 100°C (212°F) OR INCINERATE.
DISPOSE OF USED BATTERY PROMPTLY.
KEEP AWAY FROM CHILDREN.
DO NOT DISASSEMBLE AND DO NOT DISPOSE OF IN FIRE.

Information for Canada
This product complies with D.O.C limits (C.R.C., C. 1374) pertaining to class B digital apparatus.

Renseignement pour Canada
Ce produit est conforme aux normes du M.D.C. (C.R.C., ch. 1374) s'appliquant aux appareils numériques de classe B.

POWER SYSTEM
This color video camera should be used with 12 V DC only.

CAUTION:
To prevent electric shocks and fire hazards, do NOT use other than specified power source.

Système d'alimentation
Cette caméra vidéo couleur ne doit être utilisée que sur tension continue de 12 V.

Attention:
Pour éviter tout risque d'incendie ou d'électrocution, n'utilisez aucune autre source d'alimentation.

Changes or modifications not approved by JVC could void the user's authority to operate the equipment.

CONGRATULATIONS

Thank you for purchasing the JVC GY-X2 3-CCD Full Size Professional S Camcorder.
To gain maximum benefit from the camera, it is suggested that you study this booklet carefully. After reading, retain it for future reference.

FEATURES

- S-VHS High-Resolution Pictures
  S-VHS recording circuitry for high-quality pictures with horizontal resolution of more than 400 lines.
- Hi-Fi Stereo Sound
  With rotary FM Hi-Fi audio heads, the GY-X2 offers Hi-Fi stereo sound recording with superior frequency response, greater dynamic range, and improved wow & flutter performance. 2-channel linear audio with Dolby* noise reduction system is also provided.
  - * Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corportion. "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- Rugged Diecast Body
  Rugged integrated construction with newly-designed diecast aluminum body for improved durability and reliability.
- Easy-to-see LCD Panel with Backlight
  A built-in LCD panel is provided for display of lap time/tape counter, remaining tape time, audio levels, battery duration, hour meter, warning indications. Backlight capability allows easy checking even in dimly-lit places.
- Rotary erase head and AEF function permit noiseless assemble editing.
- Auto Review function for quick recording review
- Insert recording function for replacing video and Hi-Fi sound on a pre-recorded tape
- Built-in speaker for sound monitoring.
- With the optional SA-R200 time code generator, time code recording is possible.
- JVC utilizes newly developed broadcast 1/2 inch CCDs with high 650 line resolution, high sensitivity of F7 at 2000 lux and a superb signal to noise ratio of 60 dB at 0 dB gain (for U version), 58 dB at 0 dB gain (for E version)

- LOLUX captures scenes never before possible because of low lighting conditions.
  In this mode the CCD chip is maximized for low light sensitivity. This Super Sensitivity is ideal for special shooting conditions with almost no lighting.
  Good color balance is maintained even down to 3 lux illumination.
- Quick record mode for emergency recording with a single touch of a button. Exposure is controlled automatically with variable shutter, gain and iris. White balance is also continuously adjusted.
- New Auto Iris Detection Circuit
  Newly developed multi-zone iris detection circuit ensures optimum iris position even in backlit conditions or when a bright subject moves in a frame. Over-under level switchable.
- Electronic shutter with speeds of 1/100 (1/120, for E version), 1/250, 1/500, 1/1000 and 1/2000 second
- Safety Zone Indication
  In addition to center mark on/off capability, safety zone indication for the 16 : 9 screen format is available.
- Zebra pattern video level indication
- The audio level is indicated in the viewfinder.
- Highly reliable XLR connectors for audio input. Input circuit utilizes balanced input system that is less affected by external noise.
- Retake function with edit searching for easy checking of recordings at normal speed
- Built-in genlock circuit for system synchronization
- With its dual output system, the camera output can be connected directly to an external recorder.
- Y/C output connector
- Earphone jack
- Color temperature conversion filters for "3200 K", "5600 K" and "5600 K + ND"
- Variable scan.
  Flicker bars in the display image of computer monitors are caused by the differing scan rate of the computer monitors. The Variable Scan function can minimize this effect by tuning the camera shutter speed to the precise scan rate of the display screen. The small increments range from 60.2 Hz to 1966.7 Hz (1/60.2 sec to 1/1966.7 sec) for U version.
  The small increments range from 50.2 Hz to 1953.1 Hz (1/50.2 sec to 1/1953.1 sec) for E version.

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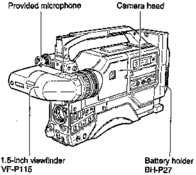
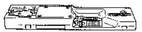
SYSTEM CONFIGURATION

The standard configuration of the GY-X2 is as shown below.

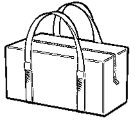
STANDARD CONFIGURATION



Tripod base KA-510



Carrying bag



PRECAUTIONS

SAFETY PRECAUTIONS

- Use only the optional NB-G1 Battery Pack or the optional AA-P250 AC Power Adapter.
- Do not modify the unit or operate it without cover panel to prevent danger.
- When there is any abnormality (abnormal noise, smell, smoke, etc.) with the unit, immediately turn the power off and contact your nearest JVC-authorized service agent.
- Do not damage or fray the power cord. Otherwise, this will cause leakage or electrical shock.
- If the camera is not going to be used for an extended period of time, leave the power cord disconnected for reasons of safety.
- If there is a danger of being struck by lightning during outdoor shooting, evacuate to a safe place immediately.

HANDLING PRECAUTIONS

- Supply voltage
  Make sure that the power is between 11.5 V and 15 V DC. If the power voltage is too low, abnormal color and increased noise could occur. Do not exceed 15 V DC in any case, or the unit could be damaged.
- Where there are strong electromagnetic waves or magnetism, for example near a radio or TV transmitter, transformer, motor, etc., the picture may contain noise and the colors may be incorrect.
- When a wireless microphone or wireless microphone tuner is used near the camera, the tuner could pick up noise.
  In such a case, select another channel.
- Cleaning the body: Wipe body with a dry, soft cloth (such as cheesecloth). When it is extremely dirty, soak the cloth in a solution of neutral detergent, wring it out and then wipe.
  To prevent deformation of the body, etc. and to avoid operation hazards, do not allow volatile liquids such as benzine and thinner to touch the body, and do not wipe it with a cloth soaked in such a liquid.
  If the equipment is soiled with water, oil, solvent, etc., wipe over with soft cloth or cotton first, then clean with gauze, etc. soaked in denatured alcohol.

VTR

- Influence of vibrations
  When tapes are played back in a place subject to excessive vibrations, color pictures may not be obtained.

● Moisture condensation prevents use of the unit.

- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a cool place to a warm place, after heating in a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
- If moisture condensation occurs on the head drum, a condensation warning appears in the recorder LCD and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

Operate Off Circuit with Battery Operation

- When the battery is depleted in battery-powered operation, the OPERATE indicator starts blinking with red color and a warning beep is heard from the earphone. If you continue operation, the Operate Off function is executed automatically to protect the unit. If this happens, replace the battery with a fully-charged one.
- If the Operate Off function is activated in the Record-Pause mode, the tape remains loaded due to the auto recording lock function.

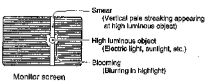
LENS

- The camera lens should be protected externally with a Clear or UV filter against accidental scratching, touching or dirt. The external lens cap should be used whenever possible.
- When the lens is changed, take special care to avoid contaminating the inner lens surface and camera gate/optical block area with moisture or dust.

CAMERA

CCD Smear and Blooming

- Due to the physical structure of the CCD in this camera it is possible to induce vertical streaking or smear when shooting an extremely bright light source.
- Another effect is the expansion of light around a bright light or object called Blooming.
  Just as you protect your image against lens flare (internal lens reflections); please be careful when shooting a bright light source.


Smear
(Vertical pale streaking appearing at high luminous object)
High luminous object
(Electric light, sunlight, etc.)
Blooming
(Blurring in highlight)
Monitor screen

Gain, Noise

- Higher levels of output gain result in a decrease in the signal to noise ratio, possibly resulting in a noisy picture.

Moire or Aliasing

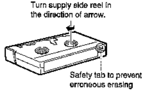
- Shooting stripes or fine patterns may cause a jagged effect or a banding in fine mesh patterns.
  Try repositioning the lens zoom to change the frequency of the detail information and eliminate the distortions.

● High Temperatures

- High temperatures can cause CCD sensor pixels to malfunction with the effect of white dots in the image. This condition could damage the CCD, and certainly raises the "fixed pattern" noise level that CCDs have thus giving a noisy picture.

VIDEO CASSETTE HANDLING

- The GY-X2 employs only cassette carrying the S-VHS and the VHS marks.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slackened. If there is any slack, turn the supply gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.
- It may not be possible to record on the first 5-second section of a new tape due to winding margin.


Turn supply side reel in the direction of arrow.
Safety tab to prevent erroneous erasing

Storage of Cassettes

- Avoid exposing the cassettes to direct sunlight, keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.

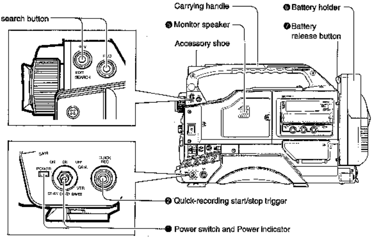
Tape Protection

- Do not leave the unit in the Record-Pause mode for too long to avoid discharging the battery and to protect the tape.
- When using this unit as a camera alone, remove the cassette to protect the tape.
- To protect the tape in the Record-Pause mode, tape tension is slackened automatically and, after about 30 minutes, drum rotation stops and then, "OPERATE" LED will be blink with green color.
- To re-start recording, press the REC button, or turn the camera section's operation switch in the order of "VTR ST-BY" – "SAVE1" – "ST-BY" to engage the Record-Pause mode.
- During extended still playback, tape action is as follows.

Elapsed time	Tape movement
Approx. 3 min. 30 sec.	Advances a few frames.
Approx. 7 min.	Advances a few frames.
Approx. 10 min. 30 sec.	Stops completely.

CONTROLS, INDICATORS AND CONNECTORS

OVERVIEW



❹ Edit search button
Carrying handle
❺ Monitor speaker
Accessory shoe
❻ Battery holder
❼ Battery release button
EDIT SEARCH
POWER
ON
OFF
CAM.
VTR
QUICK REC
❷ Quick-recording start/stop trigger
❶ Power switch and Power indicator

❶ Power switch and Power indicator
Switches the camera section's power on/off and switches the VTR section's power save modes.

Position		Power indicator	Camera	VTR	Recording	Quick recording	VTR display
CAM	VTR						
ON	ST-BY	Lights	Yes	REC PAUSE	Yes	Yes	Yes
ON	SAVE 1	Lights	Yes	STOP	No	Yes	Yes
OFF	SAVE 2	Off	No	STOP	No	No	No

❷ [QUICK REC] Quick-recording start/stop trigger
Use this button as a quick-recording start/stop trigger.
Recording starts immediately when this button is pressed, with ALC and auto-iris forcibly engaged. White balance will also be automatically adjusted accordingly. In this mode, the electronic shutter and variable scan mode cannot be used. Variable shutter is automatically engaged.
Pressing this button again or button ❸ releases the quick-recording mode and engages the Record-Pause mode. Use this function only in an emergency.

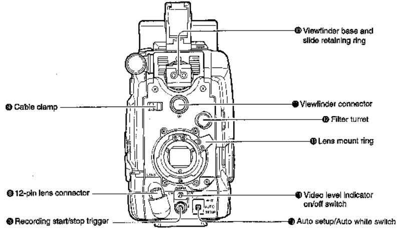
Allow 10 seconds or more after the power has been switched on, otherwise this function will not operate correctly.

❸ [VTR] Recording start/stop trigger
Use this button located on the camera head front section and the lens as a normal shooting start/stop trigger.
Recording will start about 2 seconds after the button has been pressed. Pressing it again engages the Record-Pause mode. (See illustration on next page.)

❹ [EDIT SEARCH] Edit search retake buttons
Allows forward or reverse search while in the Record-Pause mode. Use this function to determine the start point of a retake. The search picture can be viewed on the viewfinder screen.
REV : For reverse search
FWD : For forward search

❺ Monitor speaker
Outputs sound according to the setting of the AUDIO INPUT SELECT, AUDIO OUT, and MONITOR OUT switches. In the Playback mode, the tape's playback sound can be monitored. Sound level can be adjusted by the MONITOR LEVEL control. Warning beeps are also emitted from this speaker together with the monitor sound. (Warning sound level cannot be adjusted.)
Connecting an earphone to the EARPHONE jack defeats sound output from the speaker.

CAMERA HEAD FRONT SECTION


❿ Viewfinder base and slide retaining ring
❾ Cable clamp
⓫ Viewfinder connector
⓬ Filter turret
⓭ Lens mount ring
❽ 12-pin lens connector
⓮ Video level indicator on/off switch
❽ Recording start/stop trigger
⓯ Auto setup/Auto white switch

❻ **Battery holder**
Shown here is the standard battery holder. This can be used for Flat shape type and JVC NB-G1 batteries.
The 4-pin 12 V DC connector has priority over this battery holder.
Other manufacturer's battery holders can be attached instead.

❼ **Battery release button**
Open the cover while this button is pressed.

❽ **[LENS] 12-pin lens connector**
For use with a lens having a 12-pin connector.

Pin No.	Function	Pin No.	Function
1	RET switch	7	IRIS position
2	VTR start	8	—
3	GND	9	—
4	LENS AUTO	10	—
5	IRIS control	11	—
6	12 V DC	12	—

❾ **Cable clamp**
For fixing lens cable, etc.

❿ **Viewfinder base and slide retaining ring**
Attach the VF-P115 viewfinder to this base and secure it with the slide retaining ring.

⓫ **[VF] Viewfinder connector**
Connect the viewfinder cable.

⓬ **[FILTER] Filter turret**
Selects the filter setting for color conversion and ND.

1. **(3200K):** For shooting indoors, or outdoors when illumination is insufficient.
2. **(5600K):** For shooting outdoors.
3. **(5600K and ND filter):** For shooting outdoors on sunny days.

⓭ **Lens mount ring**
For retaining the lens.

⓮ **[ZEBRA] Video level indicator on/off switch**
Set this to ON to obtain the video level indication on the viewfinder screen.

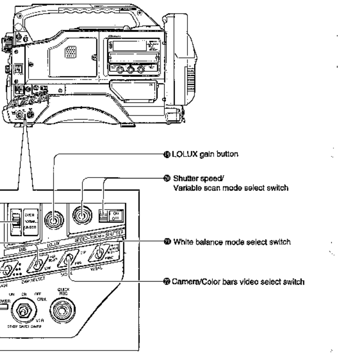
⓯ **[AUTO] Auto setup/Auto white switch**
Push the switch toward "WHT" or "SETUP" to initiate the auto setup procedure. The switch need not be pushed continously.

WHT : For automatic adjustment of white balance only.
SETUP : For successive adjustment of black balance, white balance, and black balance again.

Adjustment of black balance only is also possible in the SETUP position.

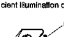
- Service Information:
"•••" position can be alloted to "ALC" (Auto Level Control) by changing the internal switch setting.
For detail, refer to "1.6.1 Switches on CP board - ④ ALC/FAW switch" in page 1-4 of the service manual.

CAMERA CONTROLS



⑲ LOLUX gain button
⑳ Shutter speed/
Variable scan mode select switch
⑯ Iris correct select switch
⑱ Status display select switch/
Safety zone select switch
select switch
㉑ White balance mode select switch
⑰ Sensitivity select switch
㉒ Camera/Color bars video select switch
OVER
NORMAL
UNDER
ON
OFF
IRIS
LOLUX
SPEED
SHUTTER
GAIN
DISP.SELECT
MODE
W.BAL
POWER
QUICK REC
CAM.
VTR
ST-BY SAVE SAVE

⑰ **[GAIN] Sensitivity select switch**
Electronically boosts light sensitivity when there is insufficient illumination on the subject.



0 dB : Off
9 dB : Boosted to approximately 3 times as much
18 dB: Boosted to apaproximately 8 times as much

⑱ **[DISP. SELECT] Status display mode select**
Switches the viewfinder indications of the camera's setting status. Push it up to switch the displays as follows.

→ Display 0 → Display 1 → Display 2 ┐

See "Status Display" on page 20.

[ZONE] Safety zone mode select
Selects the safety zone indication on the viewfinder screen. Push it down to switch the safety zone indications as follows. "OFF" (no indication), to "MODE1", "MODE2" and "MODE3". See "Safety Zone Indication" on page 21.

⑱ [IRIS] IRIS OVER/NORMAL/UNDER switch

IRIS switch can be used to adjust the exposure system to over or under exposure by about a half F stop.

OVER : for continued over exposure
NORMAL : for normal exposure
UNDER : for continued under exposure

Many conditions can cause the detection mode to expose high or low, such as back lit or spot lit situations.

⑲ [LOLUX] LOLUX gain button

LOLUX gain gives extremely low light level sensitivity for special applications. The spec is the equivalent of F1.4 at 3 lux.

LOLUX operation takes priority over normal gain operation. Pressing it again restores the previous mode. In the LOLUX mode, the ALC (automatic level control) in the Quick-recording mode is not available.

⑳ [SPEED - (V. SCAN) - SHUTTER]
Shutter speed button/Variable scan mode select switch

The OFF switch position engages the normal 1/60-second speed. Normally use this speed.

The ON switch position engages selected shutter speeds. Turning the shutter switch ON while pressing the speed button engages variable scan.

Shutter speed button:

Each time this button is pressed, the shutter speed changes to 1/100 (for U version), 1/120 (for E version), 1/250, 1/500, 1/1000, 1/2000, then back to 1/100 second.

→ 1/100 (U ver.) → 1/250 → 1/500 → 1/1000 → 1/2000
1/120 (E ver.)

This removes blurring when shooting fast-moving objects. To return to 1/60 second, press the switch to OFF.

- In areas with a 50 Hz power line, select "1/100" to reduce flickering under fluorescent light. (for U version)
- When powered, the shutter speed remains the same as selected before the power was turned off. When restarting shooting, be sure to check the shutter speed.

Variable scan mode:

- Turning the shutter switch ON while keeping the speed button pressed engages the variable scan mode.
- To change the shutter speed, release the speed button, then press it again. Each time the button is pressed, the shutter speed changes. Keeping the button pressed automatically advances the speed.
- If the power is turned off, the selected shutter speed is retained in memory but the variable scan mode is released. If the mode is required after turning the power on again, first set the shutter switch to OFF, then set back to ON while keeping the speed button pressed.
- This mode is used for shooting images on a computer monitor whose scanning speed is different from the camera's normal shutter speed. This mode covers vertical scanning frequencies ranging from 60.2 Hz to 1966.7 Hz. (for U version), from 50.2 Hz to 1953.1 Hz (for E version). However, it cannot respond to monitors with slower scanning frequencies.

• Service Information:
"AUTO 2" position can be alloted to "FAW" (Full Time Auto White) by changing the internal switch setting.
For detail, refer to "1.6.1 Switches on CP board - ⑥ ALC/FAW switch" in page 1-4 of the service manual.

㉑ [W. BAL] White balance memory select switch

AUTO 1, AUTO 2:	White balance is set to the memory automatically ajusted with switch ⑬.
PRESET:	White balance is set to the preset standard (corresponding to a color temperature of 3200K with filter control set to 1 and 5600 K when set to 2).

Independent white balance settings can be stored in the AUTO 1 and AUTO 2 positions.

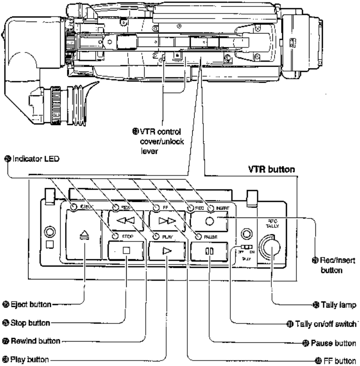
㉒ [MODE] Camera/Color bars select switch

Selects the recording or output signal.

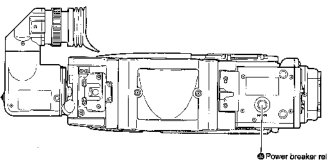
CAM : Camera signal
BARS : Color bars signal

VTR CONTROLS

Top


VTR control cover/unlock lever
Indicator LED
VTR button
EJECT
REW
FF
REC
INSERT
STOP
PLAY
PAUSE
REC TALLY
OFF ON
TALLY
Rec/Insert button
Eject button
Stop button
Rewind button
Play button
Tally lamp
Tally on/off switch
Pause button
FF button

Bottom


Power breaker release button

㉓ **VTR control cover/unlock lever**
This cover prevents accidental operations while shooting and prevents entry of water droplets and dust. To open it, push the cover up while keeping the lever depressed.

㉔ **LED indicators**
Lights to show corresponding operation status.

㉕ **[EJECT] Eject button**
Press to eject the cassette. It will take about 10 seconds for the tape to be unloaded and the cassette ejected. Press this button only when the unit is in the Record-Pause and Stop mode.
The cassette cannot be ejected if the power supply is insufficient (too low or no battery power). In such a case, replace the battery pack with a charged one.
The EJECT button can be pressed even when the VTR section is covered. LED indicator blinks while ejection.

㉖ **[STOP] Stop button**
Press to cancel the Play, FF and REW modes. The tape will stop and the Record-Pause mode will be engaged.
When the cassette is loaded and the unit is in Stop mode, the LED indicator remains lit.

㉗ **[REW] Rewind/Search button**
Press to rewind the tape. When pressed while in the Play mode, reverse search at 5 times normal speed is engaged.

㉘ **[PLAY] Play button**
Press to play back the tape. PLAY LED indicator lights while playback operation takes place.
If it is Record-Pause mode, and press PLAY button, the VTR go to "REC" mode.

㉙ **[REC-INSERT] Record/Insert button**

- **Assemble Record**
  Press together with the PLAY button ㉘ to engage the Assemble Record mode. REC and PLAY LED indicators light. Press the STOP button to stop recording. To temporarily stop recording, press the PAUSE button. To re-start recording from the Record-Pause mode, press the PLAY button ㉘.

- **Insert Record**
  Press together with the PAUSE button in the Record-Pause mode to engage the Insert-Pause mode. Press the PLAY button to start insert recording (replaces the video and Hi-Fi audio on the tape).
  See "Insert Recording" on page 39.

㉚ **[REC TALLY] Tally lamp**
Lights when recording starts and remains lit while recording.
(Goes off when in the Record-Pause mode.)
Blinks for alarm warning.

㉛ **[TALLY ON/OFF] Tally lamp on/off switch**
ON : Tally lamp lights or blinks.
OFF : Tally lamp does not light.
Set to OFF to save power.

㉜ **[PAUSE] Pause button**
Press while in the Play mode to stop the tape temporarily; a still picture (with noise) will be obtained. This button has no effect while in the Record mode. Repeated pressing of this button plays back picture in single frame steps.

㉝ **[FF] Fast-Forward/Search button**
Press to fast-forward the tape. When pressed while in the Play mode, forward search at 5 times normal speed is engaged.

Notes for VTR operation

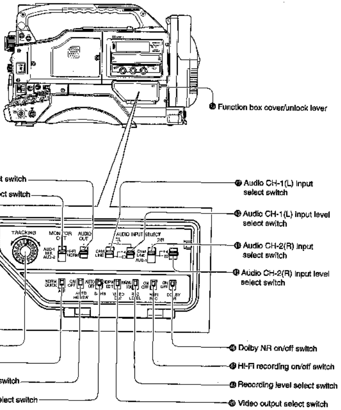
- Because this unit is designed especially for recording, still pictures may have some noise or vibrate vertically. This is not due to any defect of the unit.
- During search, pictures may contain some noise, vibrate vertically, or become monochrome. This is not due to any defect of the unit.
- With a low-capacity power unit, or a power unit whose protective circuit characteristics are not sufficient, the VTR may stop because of a shortage of power. To avoid this, use specified power units.
- No audio is available during search.
- When recording in the VHS mode on a tape previously recorded in the S-VHS mode, it is not possible to search or edit S-VHS recordings.

㉞ **[BREAKER] Power breaker release button**
If an excessive amount of current flows into the camera, the built-in power breaker is activated to cut the power for circuit protection. If this happens, press this button to re-supply the power.

Notes

- Before re-supplying power, be sure to check the cause of power breakdown and take appropriate countermeasures.
- If the power breaker is activated often, consult your JVC dealer.

VTR SETUP CONTROLS



㉟ Function box cover/unlock lever
㊱ Audio output select switch
㊲ Audio monitor select switch
TRACKING
MONITOR OUT
AUDIO OUT
AUD-1
MIX
AUD-2
HI-FI
NORM
AUDIO INPUT SELECT
1/L
2/R
CAM
LINE
+4
-60
AUD-1
NORM
QUICK
AEF
ON
OFF
AUTO REVIEW
AUTO
OFF
S-VHS
NORM
EDIT
VIDEO OUT
MANU
FIX
REC LEVEL
ON
OFF
HIFI REC
ON
OFF
DOLBY NR
㊻ Audio CH-1(L) input select switch
㊼ Audio CH-1(L) input level select switch
㊽ Audio CH-2(R) input select switch
㊾ Audio CH-2(R) input level select switch
㊳ Tracking volume
㊴ AEF select switch
㊵ Auto review on/off switch
㊶ S-VHS recording select switch
㊺ Dolby NR on/off switch
㊹ Hi-Fi recording on/off switch
㊸ Recording level select switch
㊷ Video output select switch

㉟ **Function box cover/unlock lever**
To open the cover, pull the cover toward you while pushing the lever to the left.

㊱ **[AUDIO OUT] Audio output select switch**
Selects the audio output, monitor output, and level meter indication.
HI-FI : Outputs Hi-Fi audio.
NORM : Outputs normal audio.

㊲ **[MONITOR OUT] Audio monitor select switch**
Selects the audio output of the monitor speaker and earphone jack.
AUD1 : To monitor audio channel 1 (L).
MIX : To monitor mixed sound of audio channel 1 (L) and 2 (R). Mixed with each channel at 50 %.
AUD 2 : To monitor audio channel 2 (R).

㊳ [TRACKING] Tracking control
Adjust to minimize the noise in pictures and/or Hi-Fi audio when playing back. Normally, set to the center position.

㊴ [AEF] AEF select switch
NORM : Automatic Editing Function (AEF) is fully activated for preroll assemble editing with clean results. In this position, it takes longer to start recording from the Stop mode.
QUICK: AEF's preroll is partially activated for quick recording start. However, scene transitions may be blurred.
See "Automatic Editing Function (AEF)" on page 38.

㊵ [AUTO REVIEW] Auto Review on/off switch
ON : When the Record-Pause mode is engaged, the tape reverse plays a little, then the rewound portion (approximately 3 sec. worth) is played before entering the Record-Pause mode.
Auto Review is also activated by the lens RET switch.
OFF : The Auto Review function is not available.
See "Auto Review Function" on page 38.

㊶ [S-VHS] S-VHS recording select switch
Selects the S-VHS or VHS recording.
AUTO : Recording mode is automatically selected according to the cassette used. S-VHS is selected with an S-VHS cassette and VHS with a VHS cassette.
OFF : Set to this position to record in VHS regardless of the cassette used.

㊷ [AUDIO INPUT SELECT 1/L CAM/LINE] Audio channel-1 (L) input select switch
CAM : Record L-channel sound from the 6-pin camera microphone input [illegible] .
LINE : Records sound from the XLR 3-pin audio channel-1 (L) input connector [illegible] .

㊸ [AUDIO INPUT SELECT 1/L +4/–60] Audio channel-1 (L) input level select switch
+4 : For +4 dBs line input
–60 : For –60 dBs microphone input

㊹ [AUDIO INPUT SELECT 2/L CAM/LINE] Audio channel-2 (R) input select switch
CAM : Record R-channel sound from the 6-pin camera microphone input [illegible] .
LINE : Records sound from the XLR 3-pin audio channel-1 (R) input connector [illegible] .
AUD-1 : The signal selected by the AUDIO INPUT SELECT 1/L switch is recorded for monaural soundtrack.

㊺ [AUDIO INPUT SELECT 2/R +4/–60] Audio channel-2 (R) input level select switch
+4 : For +4 dBs line input
–60 : For –60 dBs microphone input

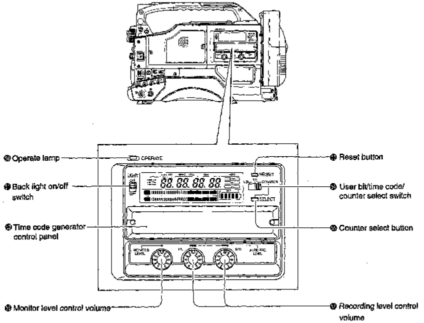
㊻ [DOLBY NR ON/OFF] Dolby NR on/off switch
ON : Dolby NR circuit is activated for normal audio recording and playback.
OFF : Dolby NR is off.
* *Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbo are trademarks of Dolby Laboratories Licensing Corporation.*

㊼ [Hi-Fi REC] Hi-Fi recording on/off switch
ON : For Hi-Fi audio recording.
OFF : Hi-Fi audio recording is not available.

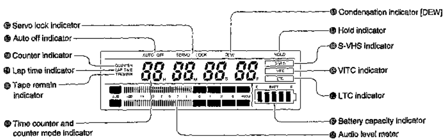
㊽ [REC LEVEL] Recording level select switch
MANU : Recording level of Hi-Fi and normal audio can be adjusted with the AUDIO REC LEVEL control [illegible] .
FIX : The recording level is fixed to the standard gain. When the signal input level is excessive, the limiter is activated to prevent distortion.

㊾ [VIDEO OUT] Video output select switch
NORM : Set to this position normally.
EDIT : When using the unit as a feeder in an editing system, set to this position so that the signal by-pass the noise canceller for less deterioration in tape dubbing.

VTR INDICATORS/AUDIO CONTROL


Operate lamp
OPERATE
Back light on/off switch
LIGHT
ON
OFF
Time code generator control panel
Monitor level control volume
MONITOR LEVEL
Reset button
RESET
User bit/time code/ counter select switch
COUNTER
SELECT
Counter select button
Recording level control volume
AUDIO REC LEVEL

VTR display panel


Servo lock indicator
Auto off indicator
Counter indicator
Lap time indicator
Tape remain indicator
Time counter and counter mode indicator
AUTO OFF
SERVO LOCK
DEW
HOLD
COUNTER
LAP TIME
TREMAIN
88H 88M 88S 88F
S-VHS
VITC
LTC
BATT
Condensation indicator [DEW]
Hold indicator
S-VHS indicator
VITC indicator
LTC indicator
Battery capacity indicator
Audio level meter

㊵ [OPERATE] Operation lamp

Operation : Lights green.
Warning : Lights or blinks red.
See "Warning" on page 23.

㊶ [LIGHT] Backlight on/off switch

ON : Backlight on.
OFF : Backlight off.

To save power in battery-powered operation, set to OFF.

㊷ Time code generator control panel

When installing the time code generator SA-R200 (optional), remove this cover, and set switches as necessary.

Note: Operation switches inside the cover are effective only when the optional SA-R200 is installed.

㊸ [RESET] Reset button

Press to reset the tape counter and lap time readout to 00:00:00:00.

㊹ [UB/TC/COUNTER] User bit/Time code/Counter select switch

UB : Displays User Bits.
TC : Displays the time code reading.
COUNTER : Displays tape counter, lap time counter, or remaining tape time according to the setting of the SELECT button ㊺ .

UB/TC display is available only when the time code generator SA-R200 (optional) is used. When it is not in use, the display shows the counter reading only.

㊺ [SELECT] Counter select button

Each time this button is pressed, the display changes as follows.

→ COUNTER → LAP TIME → T. REMAIN ─┘

COUNTER : 4-digit tape counter reading
LAP TIME : Lap time counter reading in hours, minutes, and seconds.
T. REMAIN : Remaining tape time in hours and minutes, in 1 minute increments.

For hour meter display, unload the cassette and press SELECT and REC simultaneously. Hold for about 3 seconds. The display will change to the hour meter reading.
See "Hour Meter Display" in page 40.

㊻ [MONITOR LEVEL] Monitor level control

Turn to adjust the sound output from the monitor speaker [illegible] or earphone jack [illegible] . Alarm sound level is fixed and cannot be adjusted by this control.

㊼ [AUDIO REC LEVEL 1/L, 2/R] Recording level controls

Turn to adjust the recording level of Hi-Fi or normal audio channel-1 (L)/channel-2 (R), with the recording level select switch [illegible] set to MANU. Adjust the controls so that the peak level shows about 0 dB on the audio level meter (56) .

㊽ [COUNTER] Counter indicator

Appears when the counter display (51) is in the Counter mode.

㊾ [LAP TIME] Lap time indicator

Appears when the counter display (51) is in the Lap time mode.

㊿ [T. REMAIN] Remaining tape time indicator

Appears when the counter display (51) is in the Remaining tape time mode.

(51) Counter display

Displays tape counter/lap time/remaining tape time/hour meter. Also displays time code and user bits when the time code generator SA-R200 (optional) is installed.

(52) [AUTO OFF] Auto off indicator

Appears when problems occur with the head drum, capstan, reel rotation, mechanical position, etc.
See "Warning" on page 23.

(53) [SERVO LOCK] Servo lock indicator

Appears when the drum servo or capstan servo is not locked to the input video signal.
See "Warning" on page 23.

(54) [DEW] Condensation indicator

Appears when condensation occurs. At this time, no operation but ejection is possible. Wait for a few hours until the indicator goes off.

(55) [HOLD] Hold indicator

Appears when the HOLD button is pressed with the SA-R200 time code generator installed.
See "TIME CODE GENERATOR SA-R200 (Optional)" in pages 44 to 47.

(56) Audio level meter

Displays Hi-Fi or normal audio level in recording and playback as selected by the audio output select switch [illegible] . 0 dB is the standard level.

(57) [BATT] Battery capacity indicator

Displays remaining battery time in 5 steps. With a fully charged battery, all blocks are displayed. When the number of blocks drops to about 2, the OPERATE lamp ㊵ and tally lamp [illegible] (while shooting) start blinking. Replace the battery.
See "Warning" on page 23.

(58) [S-VHS] S-VHS indicator

Appears when recording or playback in the S-VHS mode is engaged.

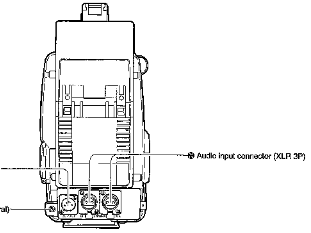
(59) [VITC] VITC indicator

Appears in VITC recording. (With the optional time code generator SA-R200)
See "TIME CODE GENERATOR SA-R200 (Optional)" in pages 44 to 47.

(60) [LTC] LTC indicator

Appears in LTC recording. (With the optional time code generator SA-R200)
See "TIME CODE GENERATOR SA-R200 (Optional)" in pages 44 to 47.

INPUT AND OUTPUT VIDEO AUDIO POWER



㊲ [DC INPUT] DC input terminal

Apply 12 V DC from an AC power adapter.

Pin No.	Function
1	GND
2	—
3	—
4	+12 V DC

㊳ [EARPHONE] Earphone jack (mono)

Insert an earphone with ø 3.5 mm plug to monitor the sound. Sound output from the monitor speaker is defeated.

㊴ [AUDIO INPUT 1/L, 2/R] Audio input connectors

Audio input connectors for channel-1 (L) and channel-2 (R). Input level can be selected from −60 dBs and +4 dBs with audio input select switch.

Pin No.	Function
1	GND (Shielded)
2	HOT
3	COLD

㊵ [AUDIO OUT 1/L, 2/R] Audio output connectors (RCA)

Outputs Hi-Fi or normal audio channel-1 (L) and channel-2 (R) as selected with the audio output select switch [illegible] .

㊶ [Y/C OUT] Y/C video output connector (7-pin)

Outputs the Y/C video signal selected with the video output select switch ㊸ .

Pin No.	Function	Pin No.	Function
1	Y signal	5	C signal
2	GND (Y)	6	GND (C)
3	—	7	—
4	—		

㊷ [VIDEO OUT] Video output connector (BNC)

Outputs the composite video signal selected with the video output select switch (㊸).

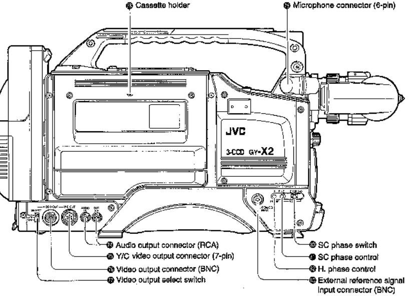
㊸ [SELECT] Video output select switch

Selects the video signal to be output from the Y/C ㊶ and composite ㊷ video signal output connectors.

CAM : Camera-through signal is output regardless of the VTR's operation mode.

VTR : When the VTR is in the Play mode, the playback signal is output. In other modes, camera-through signal is output.

OFF : Video signal output from either connector is not available. To save power, set to this position when signal is not necessary.


㊳ Cassette holder
㊴ Microphone connector (6-pin)
JVC
3-CCD GY-X2
㊲ Audio output connector (RCA)
㊱ Y/C video output connector (7-pin)
㉟ Video output connector (BNC)
㉞ Video output select switch
㊵ SC phase switch
㊶ SC phase control
㊷ H. phase control
㊸ External reference signal input connector (BNC)

㊳ **Cassette holder**
Accepts either an S-VHS or VHS cassette.

㊴ **[MIC] Microphone connector (6-pin)**
Connect the provided microphone.
With the KA-A30 microphone holder (optional), the following microphone models can be used.

- M-K50 (mono; VC-P740 optional cable required)
- MV-P602 (stereo; VC-P740 optional cable required)
- MV-P612 (stereo)

Pin No.	Function
A	R (Hot)
B	+9 V DC
C	GND
D	L (Hot)
E	L (Cold)
F	GND

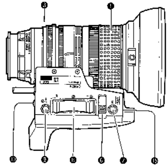
㊵ **[SC 0° 120° 240°] SC phase switch**
Adjusts the color subcarrier phase of this unit in three steps (0°, 120°, and 240°) with respect to the reference sync signal input to connector ㊸ in genlock operation.

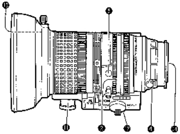
㊶ **[SC FINE] SC phase control**
Fine-adjusts the color subcarrier phase of this unit with respect to the reference sync signal input to connector ㊸ in genlock operation.

㊷ **[H PHASE] H. phase control**
Adjusts the horizontal sync phase of this unit with respect to the reference sync signal input to connector ㊸ in genlock operation.

㊸ **[GENLOCK INPUT] External reference signal input connector (BNC)**
Apply a composite video signal or black burst for genlock operation.

LENS YH13X7.5K12 (optional)





① FOCUS ring
Manual focus ring. Focus distance indicated.

② ZOOM lever/ring
Manual zoom ring with lever.
Deactivate servo zoom with switch ⑫.
Lens zoom length is indicated.

③ IRIS ring
Manual iris ring.
Deactivate auto iris with switch ⑥.

④ BACK FOCUS ring
For set-up back focus adjustment only.
Secure with the screw knob.

⑤ MACRO button (for closeups)
Turning the zoom ring counterclockwise (as seen from the front of the lens) while keeping this button (M) pressed, allows closeup shooting at up to 5 cm from the lens. The Normal Focus ring should be left set at infinity. In the Macro mode, focusing must be manually adjusted by the zoom ring; regular focus adjustment and zooming are not possible.

⑥ IRIS MODE switch
A : Auto iris On and Remote operation
M : Manual iris operation

⑦ MOMENTARY AUTO IRIS
In manual iris mode (M), pushing this button activates the auto iris function while it is held down only.

⑧ ZOOM SERVO control
Pushing this lever in the W direction makes the lens move wider.
Pushing this lever in the T direction makes the lens move tighter.
Pushing harder changes the speed of the zoom. Turn this lever on with switch ⑫.

⑨ RETURN (RET) switch
- Pressing this button in the Record-Pause mode activates Auto Review. The tape rewinds for a few seconds, then automatically plays back the rewound portion and re-enters the Record-Pause mode at the same point. Useful for checking the tape section just recorded.
  This function work only one time after become "REC-Pause" mode to keep tape position accuracy.
- This switch has no effect during record mode.

⑩ VTR trigger
To start shooting push once.
To stop shooting push again.

⑪ REMOTE ZOOM control connector
For use with Studio or Teleconferencing remote control units.

⑫ ZOOM MODE knob
SERVO : Servo zoom on
MANU : Manual zoom mode

⑬ FILTER mount screw
Mount a transparent or UV filter for lens protection by screwing this screw into the lens hood's inner groove, or the front of the lens.
Special-effect filters can also be used.
Filter diameter:
- Lens hood inside : 82 mm, 0.75 mm pitch
- Lens front : 72 mm, 0.75 mm pitch

⑭ Rear lens surface
Protect with special cover.

VIEWFINDER VF-115

❶ **Slide lock**
This stopper screw prevents the viewfinder from coming off the camera.

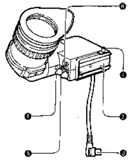
❷ **Viewfinder shoe**
Attaches to the viewfinder post on camera.

❸ **Viewfinder cable**
Connect to camera socket ⓫ .

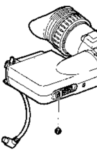
❹ **CONTRAST**
Controls the level of viewfinder contrast.

❺ **BRIGHT**
Controls the level of viewfinder brightness.

❻ **TALLY switch**
Set this switch to off if you do not want to inform the subjects by the Tally light that they are being recorded.



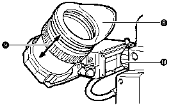
❼ **Tally light**
Lights when recording is in progress.



❽ **Eyepiece**
Blocks light from viewfinder screen and holds eye optics.
The eyepiece can be opened to view the screen directly.
The eyepiece can be rotated up and down for the best shooting position, or opened to view the screen directly.

❾ **Eyepiece focusing ring**
Loosen this ring and move the eyepiece backward and forward to focus the viewfinder for the operators vision.

❿ **Viewfinder slide locking ring**
This ring on the camera viewfinder post can be loosened to move the viewfinder to the left or right for the best operator comfort.
Warning: Avoid over-heating if a light is mounted on the camera handle accessory shoe !

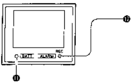


Viewfinder warning indications

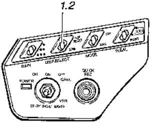
- **Viewfinder Warning Lights**

⓫ **BATTERY light**
This lights red when battery voltage becomes too low for the camera to operate.

⓬ **REC/ALARM light**
This light shines for these conditions.
Solid Green : • While recording
Blinks Green : • While the VTR prerolls before recording
• If the tape is finishing.
• If the VTR malfunctions.



VIEWFINDER STATUS DISPLAY


1.2
GAIN
DISP.SELECT
MODE
W.BAL
QUICK REC
POWER
ON
OFF
CAM.
VTR
ST-BY SAVE

This function indicates camera and VTR status on the viewfinder screen. Three display modes are available: Mode-0, Mode-1 and Mode-2. Mode-0 is engaged when the power is turned on.

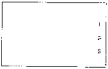
To select the mode:

1. Push the DISP. SELECT switch up. Each time the switch is pushed, the mode changes in the following sequence.

→ Mode-0 → Mode-1 → Mode-2 →

During tape playback the status display cannot be used.

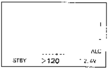
Display Mode-0



Mode-0 :
Indicates the selected functions listed below.

Indication	Selected function
I	IRIS switch set to OVER or UNDER
G or L	G : GAIN (+9, +18) L : LOLUX
S or ALC	S : SHUTTER switch set to ON or V-SCAN ALC: Auto level control

Display Mode-1


I
ALC
STBY
>120
12.4V

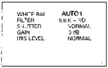
Mode-1 :
Push the DISP. SELECT switch once.

VTR mode	: SAVE, ST-BY, REC, QREC, STOP
Remaining tape time	: >120, >90, >60, >30, >20, >10, >5, >4, >3, >2, >1, >0
Input DC voltage	: Power voltage with a decimal point
Audio level	: 7 steps

(−18dB) (−12dB) (−8dB) (−6dB) (0dB) (+3dB) (+6dB)

Mode-0 indications are displayed in Mode-1.

Display Mode-2


WHITE BAL
AUTO1
FILTER
5.6K + ND
SHUTTER
NORMAL
GAIN
0 dB
IRIS LEVEL
NORMAL

Mode-2 :
Push the DISP. SELECT switch twice.

WHITE BAL	: AUTO 1, AUTO 2, PRESET, FAW*
FILTER	: 3.2K, 5.6K, 5.6K+ND
SHUTTER	: NORMAL, 1/100 (U ver.), 1/120 (E ver.), 1/250, 1/500, 1/1000, 1/2000 EEI* (Variable scan speed) : 60.2 – 1966.7(U ver.)/50.2 – 1953.1(E ver.)
GAIN	: 0 dB, 9 dB, 18 dB, LOLUX, ALC*
IRIS LEVEL	: OVER, NORMAL, UNDER

* In Quick Record mode
FAW = Full time auto white balance
EEI = Variable shutter
ALC = Automatic level control

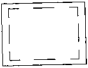
VIEWFINDER AUTOMATIC DISPLAY

Safety zone indication:

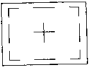
2. Push the DISP. SELECT switch down to "ZONE".
Each time the button is pushed down, the mode changes in the following sequence.

→ No indication → ZONE 1 → ZONE 2 → ZONE 3 ↩

Safety Zone 1

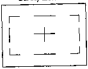


Safety Zone 2



Safety Zone 3

(16 : 9)

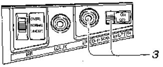


Shutter speed indication:

3. With the shutter switch set to ON, press the speed button.

→ 1/100 (U ver.) → 1/250 → 1/500 → 1/1000 → 1/2000 ↩
1/120 (E ver.)

- When the shutter switch is set to OFF, the display will be: SHUTTER NORMAL.
- Variable scan shutter speeds are also displayed.



SHUTTER switch ON

SHUTTER 1/100

SHUTTER switch OFF

SHUTTER NORMAL

Auto white/auto black operation mode indication:

4. Set the Auto set-up start switch to WHT. The following indication will appear for about 2 seconds.

With AUTO WHITE 1 :

AUTO WHITE 1
OPERATION → AUTO WHITE 1
COMPLETED

With AUTO WHITE 2 :

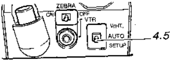
AUTO WHITE 2
OPERATION → AUTO WHITE 2
COMPLETED

5. Set the Auto set-up start switch to SETUP. The following indication will appear for about 2 seconds.

AUTO SETUP
OPERATION

After this, the black balance and white balance mode will be displayed

AUTO SETUP
COMPLETED

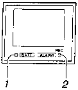


AUTO WHITE1
OPERATION

AUTO SETUP
OPERATION

In Quick Record mode and Preset White Balance mode, black balance only is performed.

VIEWFINDER WARNING MESSAGES



■ VIEWFINDER WARNING LIGHTS

1. BATTERY light

This lights red when battery voltage becomes too low for the camera to operate.

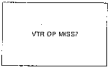
2. REC/ALARM light

This light shines for these conditions.
Solid Green: ● While recording
Blinks Green: ● While the VTR prerolls before recording
● If the tape is finishing.
● If the VTR malfunctions.

Automatic warnings:

LOW BATTERY : This blinks when the VTR or Camera battery level falls too low.
TAPE NEAR END: There are less than 3 minutes tape remaining.
TAPE END : The tape has run out.

VTR trigger



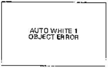
VTR OP MISS?

■ FUNCTION FAILURES

VTR WARNING : The VTR is not operating due to Condensation on the video heads, Servo failure, or other malfunctions.
VTR OP MISS? : VTR operation missed.

- The Camera/VTR switch may be in SAVE 1. The Save function stops head rotation and turns off the power to the circuitry.

White balance/Black balance



AUTO WHITE 1
OBJECT ERROR

White balance/Black balance function

AUTO WHITE 1, 2
OBJECT ERROR : Check whether the object being shot is white enough.
Check for proper filter.

AUTO WHITE 1, 2
LOW LIGHT ERROR : Check to see if increasing gain or lighting will help.

AUTO WHITE 1, 2
OVER LIGHT ERROR: Check to see if the sun or other bright light is shining in the lens.
Check that the filter is adjusted properly.

AUTO BLACK
ERROR : Auto black has been interrupted.

AUTO BLACK
LENS NOT CLOSED?: Check that Auto Iris is on, or that the lens is not connected.

ERROR : Circuit trouble exists.
Check with JVC service center.

VTR WARNING FUNCTIONS

The VTR section of this camcorder features a comprehensive warning system which warns the operator of various malfunctions, if any, during shooting/recording by means of viewfinder and display panel messages, visual indications via LED or tally lamp, and alarm sounds via the earphone or monitor speaker.
The following chart summarizes the operation of the warning system.

■ SYMPTOMS

VTR Display Panel Warning	Symptom	Operation
SERVO LOCK	Head, drum and capstan are not locked while recording. No video signal input. (Appears when recording only.)	Operation continues.
AUTO OFF	Abnormal rotation of the drum, capstan, reel. Abnormal mechanical position.	Operation will stop after about 10 seconds.
DEW	Moisture condensation occurs.	Stops. No operations except cassette ejection are possible.
TAPE END	About 3 minutes before tape end. (Appears when recording only.)	Operation continues.
	Tape ends completely.	Stops.
BATT	Battery duration warning.	Operation continues.
	Battery capacity insufficient.	Enters the Record-Pause mode, then turned off.

■ WARNING INDICATIONS

Warning	VTR			Monitor Sound	Viewfinder		
					Warning Lights		
	OPERATE LED	REC Tally	VTR Display Panel		REC Tally	BATT Tally	On Screen Display
SERVO LOCK	✇	✇	"SERVO LOCK"	-▮ ▮ ▮ ▮-	◑	—	VTR WARNING (SERVO)
AUTO OFF	✇	—	"AUTO OFF"	▮▮▮▮▮▮	◑	—	VTR WARNING (HARD)
DEW	●	—	"DEW"	-▮ ▮ ▮ ▮-	◑	—	VTR WARNING (DEW)
TAPE END	◑	◑	—	– ▮ –	◑	—	TAPE NEAR END
	●	✇	—	▮▮▮▮▮▮ (REC, STOP)	◑	—	TAPE END
BATT	◑	◑ (REC)	Note E BATT F ▮▯▯▯	Note – ▮ – (REC, STOP)	—	Note ◑	Note LOW BATTERY
	●	✇	Note E BATT F ▯▯▯▯	Note ▮▮▮▮▮▮	—	—	OPERATE OFF after recording pause.

- Note: When it is "SAVE1" mode, only these function works.

- The OPERATE LED usually remains lit green to show operation on. In case of warning, it changes to red. Operation is as above.
- The alarm sound is output together with regular monitor sound via monitor speaker or earphone.
- Indication symbols:

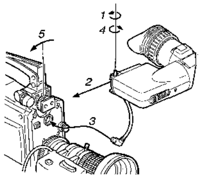
● : Lights ◑ : Blinks once per second ✇ : Blinks 4 times per second

▮▮▮▮▮▮ : Continuous sound – ▮ – : Long beeps once per second -▮ ▮ ▮ ▮- : Short beeps 4 times per second

PREPARATIONS

Service Information:
The VF-P550 viewfinder cannot be attached to the GY-X2 for the reason of the power capacity.
When you want to use a 5" viewfinder for the GY-X2, make sure to attach it the VF-P550B viewfinder.

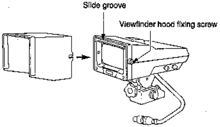
ATTACHING THE VF-P115 VIEWFINDER

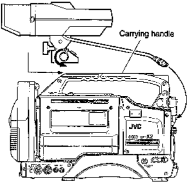


1. Loosen the stopper screw.
2. Attach the viewfinder with its guide aligned with the shoe.
3. Connect the cable.
4. Tighten the stopper screw.
5. Tighten the ring.

ATTACHING THE STUDIO VIEWFINDER VF-P400/VF-P550B (optional)

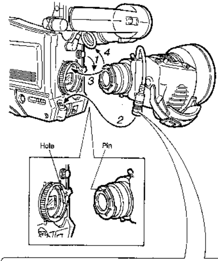
Attach the viewfinder to the slide bracket of the carrying handle. For details, refer to the VF-P400's instructions.


Slide groove
Viewfinder hood fixing screw


Carrying handle
JVC

ATTACHING THE YH13X7.5K12 ZOOM LENS (optional)

1. Loosen the mount ring.
2. Connect the cable.
3. Attach the lens with its pin aligned with the hole in the mount.
4. Tighten the mount ring.

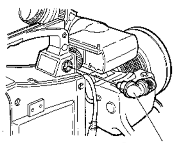


When unplugging the cable, grasp this portion and pull up. If you have any difficulty, it may be better to remove the lens itself first. In this case, be careful not to drop the lens.

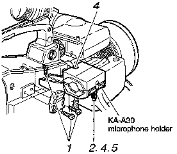
MICROPHONE ATTACHMENT

Connecting the provided microphone

Connect the provided microphone to the microphone connector (6-pin).

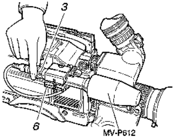


ATTACHING THE MV-P612/MV-P602/M-K50 OPTIONAL MICROPHONE

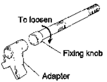


With the optional KA-A30 microphone holder, the optional MV-P612 (stereo), MV-P602 (stereo) and M-K50 (mono) microphones can be used.

1. Secure the microphone holder with 3 screws.
2. Turn the external fixing knob to loosen the quick release hook. Pull the knob to open the holder.
3. Attach the microphone to the microphone holder so that the microphone does not interfere with the cassette holder. With a stereo microphone, make sure that the left/right-sides are correct.
4. Turn both the external and internal fixing knobs to secure the microphone.
5. Close the holder.
6. Secure the microphone cable with the KA-A30's cable clamp.



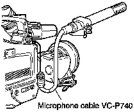
- **JVC MV-P612 microphone (optional)**
  To connect the JVC MV-P612, use the 6-pin connector.



M-K50/MV-P602

- **JVC M-K50/MV-P602 microphones (optional)**
  To connect these models, first remove the microphone from the adapter and connect the optional VC-P740 microphone cable instead. Use the 6-pin connector.

- **Other microphones**
  When using microphone models other than the above, connect to the XLR 3-pin audio input connector located below the battery holder.



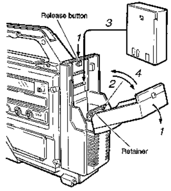
Service Information:
Battery capacity
NB-G1 (JVC) : 2.2 Ah, 12 V
NP-1B (Sony) : 2.3 Ah, 12 V
NP-1A (Sony) : 1.7 Ah, 12 V

POWER SUPPLY

NB-G1 (JVC) or Flat shape type BATTERY PACK

To install the battery pack

1. Open the cover while pressing the buttons.
2. Swing out the battery retainer.
   (For Flat shape type, leave the retainer in place.)
3. Install the battery pack with its terminals facing the camera.
   (The illustration shows an NB-G1 battery pack.)
4. Replace the battery retainer and close the cover.



Operating time

A fully charged battery pack offers the following continuous operating time at 25°C:

NB-G1 : Approx. 40 minutes

The operating time may be shorter than this depending on the battery storage condition and ambient temperature.

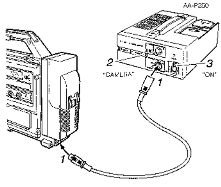
- **Before recording, charge the battery pack. It is recommended that several charged battery packs are kept at hand as spares.**
- **To charge the battery pack, use an optional AC power adapter. For the charging procedure refer to the instruction manual of the optional AC power adapter.**
- **The battery condition can be checked on the viewfinder screen. (See page 20.)**
- **When the battery pack is becoming low, a warning indicator appears. (See page 23.) When this indicator is seen, replace the battery pack with a charged one.**
- **Do not leave the battery pack in a place subject to high temperatures, as this could damage it and make it unusable.**

Note

If power is supplied from both DC input (4 pin XLR) and battery holder simultaneously, the power source from DC input has priority. If the connector on the DC input side is disconnected or connected, the power may be turned off. Turn the power switch on again.
In this condition, if low battery warning is indicated, be sure to disconnect the power of DC input to switch power source of battery holder. Otherwise, automatic power source alternation may not work properly.

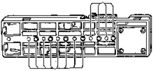
AA-P250 AC POWER ADAPTER

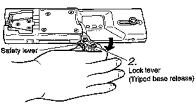
1. Connect the camera head to the AC power adapter using the cable provided with the AC power adapter.
2. Set the switch to CAMERA.
3. Set the POWER switch of the AC power adapter to ON.

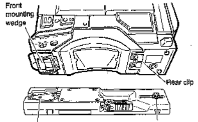


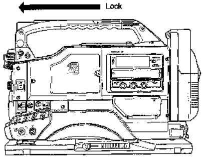
Do not use power units other than specified, otherwise the recorder may stop due to a temporary drop in power because of the operation of the protective circuit.

TRIPOD MOUNTING


These holes cannot be used.
1. Tripod mounting holes


3. Safety lever
2.
Lock lever
(Tripod base release)


Front mounting wedge
Rear clip
5. Front mounting clip
4. Rear mounting pin



The KA-510 Tripod Base included with the camera must be used to secure the camera to a tripod or camera stand.

1. Tripod mounting holes
Match a 3/8 or 1/4 inch tripod mounting screw to the best hole for good balance.

2. Tripod mount release
Pull back once to activate the front clip before mounting the camera.

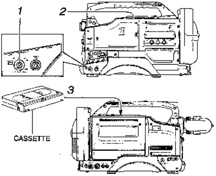
3. Safety lever
Prevents accidental release. If the camera is secured in the Base, this release lever must be pushed in order to pull the release lever and open the Base.

4. Rear mounting pin
Make sure the rear mounting clip of the camera is firmly on the Tripod Base, so that the rear mounting pin can be engaged properly.

5. Front mounting clip
Making sure the rear mounting pin engages, slide the front mounting wedge on the camera into the front mounting clip of the base until it engages automatically with a clik.
The front clip will hold the camera safely, but without engaging the rear clip, the camera will tend to move slightly in the Base.

6. Mounting error
Double check that the rear pin is engaged properly.
The front clip will hold the camera safely, but without engaging the rear clip, the camera will tend to move slightly in the Base.

LOADING, EJECTING



1. Set the POWER switch to "ST-BY".

2. Press the EJECT button to open the cassette holder. The eject indicator blinks.

3. Insert a cassette. Make certain before loading the cassette that the tape is not slack. Close the cassette holder slowly. When ejecting a cassette, first engage the Stop or Record-Pause mode, then press the EJECT button. It takes approximately 10 seconds to eject in the Record-Pause mode because the process starts from the fully-loaded tape position.

Ejection is not possible when the power is off.

Note: Do not use S-VHS or VHS cassettes longer than 160 minutes to avoid tape damage.

Note
Because tape may be damaged while search mode, do not use C-Cassette adaptor.

ADJUSTMENTS BEFORE SHOOTING

CAMERA CONTROL SETTINGS FOR ADJUSTMENT

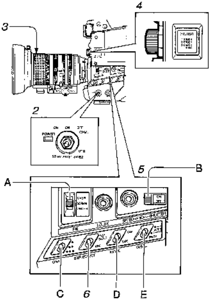
1. **POWER ON**
1. First place a charged battery in the battery holder or connect DC power to the DC input.
2. Turn the AC power adapter on.

2. **SAVE/ON**
Turn the POWER switch to the SAVE 1/ON middle position.

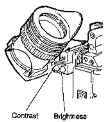
3. **AUTO IRIS ON**
Initially set the lens Iris to Automatic.
Later take advantage of the Momentary Iris control to activate the camra's exposure system when needed.

4. **FILTER turret**
Choose the proper Filter Selection for the lighting conditions.

5. **Left side SWITCH positions**
- A. IRIS compensation switch; set to NORMAL.
- B. SHUTTER switch; set to OFF position (1/60, U ver./1/50, E ver.)
- C. GAIN switch; set to 0 dB. The single dot position is always 0 dB.
- D. MODE (CAM/BARS) switch; set to CAM.
- E. W. BAL (Auto White Balance Memory) switch; set to 1 or 2.



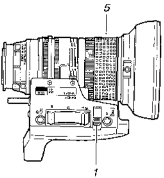
VIEWFINDER ADJUSTMENT

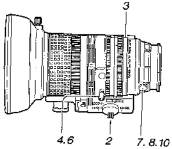


Adjust the viewfinder to the operator's eyesight and shoulder position for the best comfort.

Next adjust the brightness and contrast for the viewing conditions.

BACK FOCUS ADJUSTMENT





It is only necessary to perform this when focusing is not correct in both the Telephoto and Wide-angle positions, such as when the lens is attached for the first time.

Adjust the viewfinder for sharpness first.

It is easier to adjust back focus when the subject is more than 3 meters from the subject.

1. Set the Iris mode to M (Manual).
2. Set the Zoom mode to MANU (Manual).
3. Open the Iris ring to F1.4. If the illumination is too strong, reduce it or move to a darker place.
4. Turn the zoom lever until the lens is completely telephoto.
5. Focus on the subject. There is a specific chart that looks like a dart board which is helpful.
6. Set the lens to completely Wide-angle.
7. Loosen the back focus ring retaining knob.
8. Adjust the back focus ring for the best possible focus.
9. Repeat steps 4 through 8 for fine adjustment.
10. Tighten the back focus ring retaining knob to secure the ring.

NORMAL AUTO WHITE/BLACK BALANCE ADJUSTMENT

Adjust White Balance:

- When the type of light source changes before or during shooting.

Adjust Black Balance:

- When the unit is used for the first time each day.
- After a long period of storage.
- When ambient temperature has changed dramatically.
  The last Black and White balance settings are kept in memory even if the camera is turned off.

1. Set the Iris to Automatic (AUTO) or Manual, depending on the subject.
(The Iris will be closed automatically during Black Balance.)

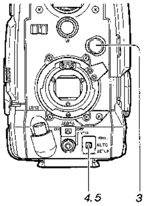
2. Fill the screen with a white object placed in the same position as the subject, and lit by the same primary lighting as the subject.
Set the W. BAL switch to either 1 or 2.

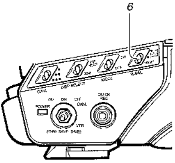
3. If the FILTER turret has not been set for the current lighting color temperature, do so now. See page 7.

4. For AUTO SETUP (both Black and White Balance) press the Auto switch in the down position momentarily.
If White Balance is in Preset or Quick Recording is selected, Black Balance only will be performed.
Black Balance operation will be repeated after White Balance has been performed.

For White Balance only, push the switch in the up position momentarily.

5. During the process Auto Set Up, Black Balance or White Balance "Operation" and "Completed" will show in the viewfinder.



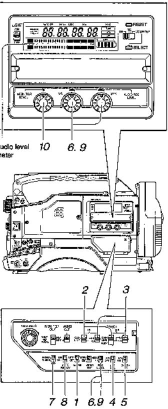


Function Failures:
WHITE BALANCE/BLACK BALANCE function

AUTO WHITE 1, 2 OBJECT ERROR	Check whether the object being shot is white enough. Check the filter.
AUTO WHITE 1, 2 LOW LIGHT ERROR	Check to see if increasing gain or lighting will help.
AUTO WHITE 1, 2 OVER LIGHT ERROR	Check to see if the sun or other bright light is shining in the lens. Check that the filter is adjusted properly.
AUTO BLACK ERROR	Auto Black has been interrupted.
AUTO BLACK LENS NOT CLOSED ?	Check that Auto Iris is on, or that the lens is not connected.
ERROR	Circuit trouble exists. Check with JVC service center.

VTR CONTROL SETTINGS BEFORE SHOOTING

SETTING THE SWITCHES AND AUDIO LEVEL



1. S-VHS mode

Setting the S-VHS/VHS mode switch

1. Open the function box cover by pushing the unlock lever.
2. Set the S-VHS switch as required.

S-VHS mode : Set switch to AUTO.
VHS mode : Set switch to OFF.

- S-VHS recordings are not possible with VHS cassettes. The VHS mode will be automatically selected.
- VHS mode will record on S-VHS tapes in VHS mode.
- Playback mode is automatic — No switch change.
- S-VHS indicator light
  S-VHS ON : Steady light

2. Audio input

- Audio input channel-1 (L) select switch
  - **CAM** : To record the L channel of the microphone input
  - **LINE** : To record the audio channel-1 (L) (XLR 3-pin) input
- Audio input channel-2 (R) select switch
  - **CAM** : To record the R channel of the microphone input
  - **LINE** : To record the audio channel-2 (R) (XLR 3-pin) input
  - **AUD-1** : To record the audio channel-1 (L) input on channel-2 as well. Set to this position when an monaural microphone is used.

3. Audio level adjustment with audio line input

Set the audio channel-1 (L)/channel-2 (R) line input level select switch as follows.

+4 : For +4 dBs line input
–60 : For –60 dBs microphone input

4. Hi-Fi/Normal sound

Set the Hi-Fi REC select switch.

ON : To record on the Hi-Fi and normal audio tracks
OFF : To record on the normal audio tracks only

5. Dolby NR on/off

Set the Dolby NR on/off switch.

ON : For recording/playback with Dolby noise reduction
OFF : Dolby noise reduction off

6. Recording level

Set the recording level select switch.

MANU : Set to this position when adjusting the level manually with the recording level controls.
FIX : To record with standard gain. When the level of signal input is excessive, the limiter is activated to prevent distortion. In this position, the recording level controls are not operate.

7. Assemble recording

Set the AEF select switch.

NORM : AEF is activated for preroll assemble recording with noiseless scene transitions. It takes longer to restart recording from the Record-Pause mode.
QUICK: AEF preroll works partially for quick recording start from the Record-Pause mode. Scene transitions ar e blurred.

See "Automatic Editing Function" on page 36.

8. Auto Review function

Set the AUTO REVIEW switch.

ON : Reverse plays the tape from the Record-Pause mode and plays for approximately 3 seconds, then enters the Record-Pause mode again. For reviewing the last-recorded section.
OFF : This function is not available.

See "Auto Review Function" on page 38.

- Adjusting the audio recording level and monitor level

9. Recording level

With the audio recording level switch set to "MANU", adjust the recording level controls of both the Hi-Fi/normal audio channels 1 (L) and 2 (R) so that the peak level in the audio level meters shows about "0 dB".

When the recording level select switch is set to "FIX", these controls are inoperable.

10. Monitor speaker/earphone level

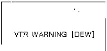
Adjust the monitor level control to optimize the sound level. Alarm sound level is fixed and cannot be adjusted by this control.

SHOOTING OPERATION

NORMAL SHOOTING

1. First set the POWER switch to VTR SAVE 1, then to VTR ST-BY. The power is turned on and the POWER indicator lights red. The display panel comes on.

2. Make sure that the "DEW" (moisture condensation) warning indication is off. If it is on, wait until it goes off. When moisture condensation occurs, the warning indication appears on the viewfinder screen.



VTR WARNING [DEW]

Viewfinder indication

3. Insert a video cassette.
   See "Loading, Ejecting" on page 29.

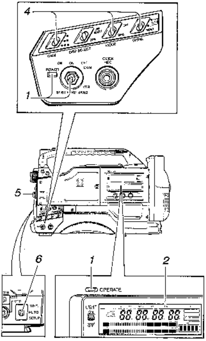
4. Set the switches as required.
   "CAM"
   "AUTO 1" or "AUTO 2"
   Sensitivity suitable for the subject
   Set the iris switch of lens to "A".

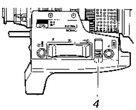
5. Select the filter according to the lighting condition.

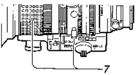
Position 1 (3200K)	: For shooting indoors or outdoors when illumination is not sufficient
Position 2 (5600K)	: For shooting outdoors
Position 3 (5600K + ND)	: For shooting outdoors on a sunny day

6. Adjust the white balance and black balance. (See page 31.)

7. Point the camera at the subject and determine the angle of view and focus with the zoom lever and the focusing ring.







- Service Information:
The trigger button on the standard lens for the GY-X2 is a non-lock type. For use of other lenses whose trigger buttons are alternate type (lock type), internal switch setting must be changed.
For detail, refer to "1.6.1 Switches on CP board - ② Lens trigger switching" in page 1-4 of the service manual.

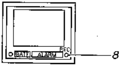
8. Press the recording start/stop trigger on the camera or the PLAY button on the VTR section to start recording.
Once recording has started, the tally lamps on the VTR section and the viewfinder light red, and the REC indication in the viewfinder lights green.

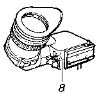
9. To stop recording, press the recording start/stop trigger on the camera again, or the PAUSE button on the VTR section. The unit enters the Record-Pause mode after Quick Review.

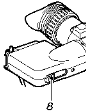
Note
- If the STOP button is pressed to stop recording, it takes longer to restore the Record-Pause mode. In this case, set the POWER switch to VTR SAVE 1 once, then set to VTR ST-BY again.

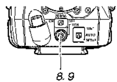
10. When shooting is completely finished, unload the cassette and remove the battery pack or turn the power off.

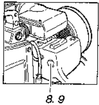
Notes
- If you switch off the power within one second after the cassette holder is opened, it may not be closed fully. In this case, turn the power on and close the cassette holder. Then turn the power off.
- The cassette cannot be ejected if the power supply is insufficient (too low or no battery power). In such a case, replace the battery pack with a charged one.
- The REC/ALARM indicator (green) in the viewfinder blinks until recording actually starts. This is not due to any defect of the unit, but indicates that the VTR is preparing for recording.
- To protect the video heads if the Record-Pause mode is continued for more than about 30 minutes, drum rotation stops and the operation LED starts blinking green. To re-engage the Record-Pause mode from this status, press the REC button on the VTR section or set the POWER switch in the order of VTR ST-BY – VTR SAVE 1 – VTR ST-BY.
- If the VTR trigger button is pushed very quickly and repeatedly, the viewfinder record tally light may blink incorrectly. To clear this condition, turn the camera off, or push the stop button on the VTR.

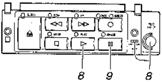












Power Switch	AUTO SAVE Time	VTR Mode	AUTO EDIT Approximate Time		VTR Condition
			Normal	Quick	
ST-BY	—	STOP	8 sec	8 sec	Tape is unloaded.
	< 5 min	Rec-Pause	1.5 sec	0.6 sec	Tape in pause.
	> 5 min	Rec-Pause	2 sec	1 sec	Tape tension is loosened.
	> 10 min	Rec-Pause	3 sec	2 sec	Pinch roller/Capstan off
	> 30 min	Rec-Pause	5 sec	5 sec	Head drum stopped.
SAVE1	—	—	10 sec	10 sec	Power on, Head drum stopped, Capstan stopped, Tension off.
SAVE2	—	—	NO	NO	Power off, Head drum stopped, Capstan stopped, Tension off.

• Service Information:
If it is wanted to inactivate ALC function in the QUICK REC mode, change of internal switch setting makes it possible.
For detail, refer to "1.6.1 Switches on CP board - ⑨ QREC ALC switch" in page 1-4 of the service manual.

QUICK RECORDING

The quick-recording function ensures pictures of reasonable quality even when there is no time for camera adjustments and settings.

- Auto iris
- Video ALC
- Full-time audo white balance
- Camera output even when color bar is selected

Allow 10 seconds or more after the power has been switched on, otherwise the quick-recording function will not operate properly.

- Quick-recording is possible with the operation switch set to either ST-BY or SAVE 1.

ITEMS TO BE CHECKED

- For the quick-recording function to work properly, check the following items:
  1. A charged battery must be installed.
  2. There is no condensation on the video heads.
  3. A cassette with its safety tab in place must be loaded.

PROCEDURE

1. Check points 1, 2 and 3 above.

2. Press the QUICK REC trigger.

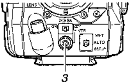
3. For Record-Pause mode, press one of the following triggers:

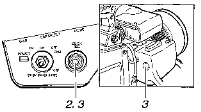
- QUICK REC trigger
- VTR trigger on the camera
- VTR trigger on the lens
- "PAUSE" button on the VTR

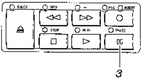
In Record-Pause mode, the camera resumes the status in which it was before quick recording was initiated.

Note

- If the STOP button on the VTR section has been pressed and "STOP" appears on the viewfinder screen, it takes longer to initiate quick-recording. Return the POWER switch to SAVE1 and set to ST-BY again.
- Do not press the Quick Record trigger quickly and repeatedly. (See note on previous page.)
- If VTR start to "REC" from stop mode, audio level may change at the beginning of recording.







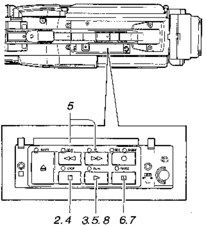
VIDEO AUTO LEVEL CONTROL (ALC) CIRCUIT

The Quick Record mode incorporates a Video Auto Level Control (ALC) circuit. This keeps the video level constant through the combined use of auto iris, electronic shutter, and sensitivity boosting.

- Under standard lighting conditions, the video level is kept constant by the auto iris.
- If the light increases and the iris is closed to its smallest aperture, the video level is kept constant by changing the shutter speed to lower light sensitivity.
- If the light decreases and sensitivity is insufficient even at maximum iris aperture, the electric gain circuit is activated to increase the sensitivity by 1 step. Since this is a stepping system (non-linear), the picture becomes brighter suddenly, resulting in unnatural scene continuity. To prevent this, the GY-X2 uses a system which activates both the gain-up and electronic shutter simultaneously, balancing the "plus" of the gain-up with the "minus" of the shutter to keep the video level constant.

When the gain-up is functioning, ALC operation is performed by changing the shutter speed. If lighting should again become insufficient, the gain is boosted by 1 more step and the same operation is performed. The gain-up operation continues up to 18 dB.

PLAYBACK OPERATION



WARNING: TO AVOID ERASING MASTER MATERIAL, **PRESS STOP IMMEDIATELY** AFTER LOADING CASSETTE FOR PLAYBACK.

To play back the tape:

1. Load a recorded cassette and make sure that the unit is in the Record-Pause mode.
The Pause and Record LED are light up to red.

2. Press the STOP button.

3. Press the PLAY button.
Playback pictures will be seen on the viewfinder screen.

4. Press the STOP button to stop playback.

To search at high speed:

5. Press the REW or FF button while in the Play mode; reverse or forward search will start. To restore normal playback, press the PLAY button.
The search speed is 5 times normal in both directions.

- During search, there may be noise or loss of color in the picture or the picture may become monochrome. This is normal and not a defect of the unit.
- Hi-Fi audio is not output during search.

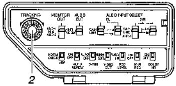
To play stills or advance frames:

6. Press the PAUSE button for still picture playback.

7. Press again for frame advance. Keeping it pressed advances frames continuously.

8. Press the PLAY button to restore normal playback.

- To protect the tape and video heads if still playback continues for a long time, the tape is advanced by a few frames after about 3 minuts 30 seconds and again after about 7 minutes. After about 10 minutes 30 seconds the head drum stops rotating.
- Noise or vertical vibration in the picture may appear. This is normal.



TRACKING CONTROL

To perform tracking adjustment when the playback picture is too grainy or contains noise.

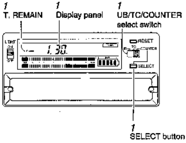
1. Play back the tape.

2. Turn the TRACKING control slowly to reduce noise while checking the playback picture. Normally, set the control to its center position.

REMAINING TAPE TIME DISPLAY

1. The remaining tape time is displayed on the display panel. Set the UB/TC/COUNTER select switch to "COUNTER". "T. REMAIN" appears and the remaining time is displayed. Press the SELECT button to restore to the tape counter display. The remaining tape time is displayed in 1-minute increments.

- Just after recording is initiated, the display shows "– H – – M". The remaining time will be displayed after a few seconds.
- The remaining tape time is approximate estimate time. Actual remaining time may be different.


1
T. REMAIN
1
Display panel
1
UB/TC/COUNTER
select switch
LIGHT
ON
OFF
1.30
RESET
TC
COUNTER
SELECT
1
SELECT button

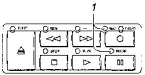
RETAKE FUNCTION BY EDIT SEARCH

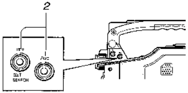
The retake function allows checking of the record picture without leaving the Record-Pause mode. Determine the point at which you want to strart the next take while checking the search picture at normal speed in either direction.

1. Make sure that the unit is in the Record-Pause mode, and Pause and Record LED are light up to red.

2. To search in the reverse direction, keep the REV button depressed. To search in the forward direction, keep the FWD button depressed. When the button is released, the Record-Pause mode will be engaged.

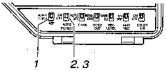
Notes for VTR operation
- When recording in the VHS mode on a tape previously recorded in the S-VHS mode, it is not possible to search or edit S-VHS recordings.

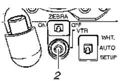

1
REW
STOP
PLAY
REC
PAUSE

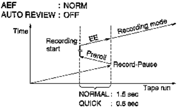

2
EDIT
SEARCH

ADVANCED FUNCTIONS – VTR

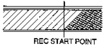
AEF (AUTOMATIC EDITING FUNCTION)



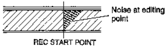

ZEBRA
ON
OFF
VTR
WHT.
AUTO
SETUP
2


AEF : NORM
AUTO REVIEW : OFF
Time
Recording start
EE
Recording mode
Preroll
Record-Pause
Tape run
NORMAL : 1.5 sec
QUICK : 0.6 sec

- Flying erase head


REC START POINT
Tape run

- Fixed head


Noise at editing point
REC START POINT

NORMAL

1. Set the AEF select switch to NORM to activate the Automatic Editing Function (AEF).
2. With the AEF activated, pressing the recording start/stop trigger prerolls the tape for about 1.5 seconds (with AUTO REVIEW switch set to OFF) and the unit enters the Record-Pause mode. When the Record-Pause mode is disengaged and recording is started, no recording takes place in the initial 1.5 seconds in order to allow tape running to stabilize for assemble shooting with clean scene tansitions. (Called "backspace editing".)

QUICK RECORD

- This unit incorporates a rotary erase head and frame servo circuitry to provide clean assemble shooting without rainbow noise (color beats). However, with the AEF select switch to "QUICK", the tape is prerolled for only 0.6 seconds to permit quick recording start. Scene transitions will be blurred in this mode.

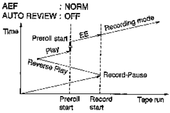
Note

- Some frames may be dropped if the unit is moved or subjected to excessive vibration while in the Record-Lock or Record-Pause mode.

FLYING ERASE HEAD

The rotary erase head erases the video tracks consecutively. When recording video signals, the rotary erase head erases each track just before the video head records on the track.
This prevents the rainbow noise that appears with fixed erase head.

AUTO REVIEW


AEF : NORM
AUTO REVIEW : OFF
Time
Preroll start
EE
Recording mode
Play
Reverse Play
Record-Pause
Preroll start
Record start
Tape run

3. Set the AUTO REVIEW switch to ON to activate the Auto Review function. This function rewinds the tape when the Record-Pause mode is engaged and plays back a brief portion of the last-recorded segment to confirm that the recording is satisfactory.

- With the AEF switch set to NORM, the tape reverse plays about 4.5 seconds, then played back for about 3 seconds. After playback the unit enters the Record-Pause mode.
- With the AEF switch set to QUICK, the tape reverse plays about 3.6 seconds, then played back for about 3 seconds. After playback the unit enters the Record-Pause mode.

INSERT RECORDING

The GY-X2's insert-recording capability allows previously-recorded video and Hi-Fi audio signals to be replaced with new material.

1. Preparations

- Set the POWER switch to ST-BY.
- Insert a pre-recorded tape.
- Open the VTR panel cover and check the indicators to ensure that the unit is in the Stop mode. (If not, press the STOP button to engage the Stop mode.)
- Select the Counter mode of the display panel.

2. Set the edit-out (insert-out) point

- Press the PLAY button to engage the Play mode. When the point you want insert recording to end is reached, press the PAUSE button to engage the Still mode.
- Press the counter RESET button to set the counter reading to "0000".

3. Set the edit-in (insert-in) point

- Press the REW button to rewind the tape to locate the point you want to start insert recording. When reached, press the PAUSE button to engage the Still mode.

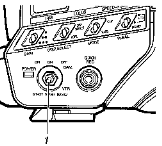
4. Engage the Insert-Pause mode

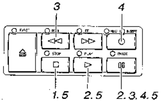
- In the Still mode, press the REC and PAUSE button simultaneously to engage the Record-Pause mode.
- Press the INSERT (REC) and PAUSE button simultaneously to engage the Insert-Pause mode. Both the INSERT and PAUSE indicators light.

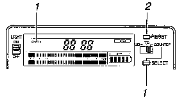
5. Starting and stopping insert recording

- Press the PLAY button to start insert recording. To stop recording before the edit-out point, press the PAUSE button.
- Insert recording stops automatically at the tape counter reading of "0000", and the unit enters the Play mode.
- In the Insert-Recording mode, both the INSERT and PLAY indicators remain lit. The video and Hi-Fi audio tracks are in the Record mode, while the normal audio tracks are in the Play mode.
- During insert recording, press the STOP button to stop the insert recording, the tape is unloaded and the unit enters the Stop mode.

- Normal audio cannot be inserted.
- During insert recording, pre-recorded Hi-Fi audio is erased even if the Hi-Fi REC ON/OFF switch is set to OFF.
- Insert recording is not possible on a video tape on which the control signals have been recorded improperly or not at all. If a no-signal tape portion (no control signals) is reached during insert recording, the unit automatically enters the Play mode.
- To protect the tape and video heads, the tape is unloaded and the unit enters the Stop mode if the Insert-Pause mode is continued for about 10 minutes 30 seconds.
- If tracking is not adjusted, proper insert recording is not possible. Adjust the tracking control beforehand to minimize noise.







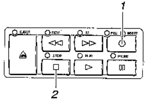
• Service Information:

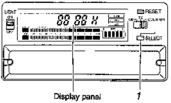
If the VTR trigger button is pressed in recording, a sound (ticking) generated by pressing the trigger button may possibly be recorded since the VTR starts to enter the Stop mode with reception of the trigger signal. When the AEF switch is set to "QUICK", such a noise recorded part is erased by overlapping. on the other hand, if the switch is set to "NORM", that part is not overlapped and the trigger noise remains in the recording.

However, if setting of the VTR's internal switch is changed, it makes rerecording in such the part possible with activation of frame servo even in the AEF mode.

For detail, refer to "1.2 Internal switches" of the service manual for the BR-S422 (Manual No. 9277(U Ver.)/No. 9288(E ver.)).

HOUR METER





The display panel also features an hour meter function (accumulated head drum operating time).

1. Remove the cassette and shut the cassette holder. Press the REC and SELECT buttons simultaneously, keeping them depressed for about 3 seconds.
The head drum's accumulated operating time of head drum is displayed on the display panel as a 4-digit number.

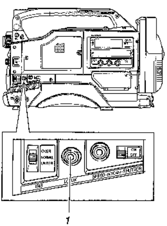
2. Press the STOP button to restore the regular tape counter display.

Note

No hour meter display, if cassette holder is open.

ADVANCED FUNCTIONS – CAMERA

LOLUX MODE



With this function a good dynamic range of brightness will be captured even under conditions where it is difficult to see with the human eye.
Because this is a 3 CCD chip camera the color rendition will also be true to life.
LOLUX enables shooting at 3 lux or 0.2 footcandles at F1.4.
One footcandle is the equivalent of the amount of light cast by one candle at a distance of one foot.

The basic underlying principle of LOLUX is to combine the light gathering capacity of the CCD chip.
The signal to noise ratio and the resolution are reduced, but it is possible to shoot subjects otherwise impossible.

BASIC OPERATION:

1. Push the LOLUX button momentarily to engage the function. Push again to disengage.
The regular GAIN settings will be inactive, but the Auto Iris and Shutter will operate normally.
In QUICK RECORD mode only the Auto Iris, the Full Time Auto White and the EEI variable shutter remain engaged.

Note

Because LOLUX is very high gain mode, white dots may be shown on the picture.
See "CAMERA PRECAUTIONS" on page 5.

IRIS

IRIS COMPENSATION SWITCH (OVER/NORMAL/UNDER)

1. This switch compensates by about a 1/2 step for both over- and under-exposure in the auto iris mode.

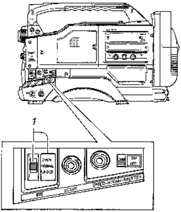
OVER : For about 1/2 step over-exposure from the standard.

NORMAL : Restore to standard.

UNDER : For about 1/2 step under-exposure from the standard

Note

This function is operable in the auto iris mode only. If the iris is near its full open or close position, this function may not be operable.



Lens YH13X7.5K12 (optional)

AUTO IRIS SETTING

The auto iris mode can be engaged in either of the following ways.

2. Auto iris switch

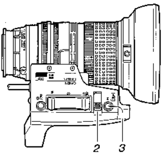
Set the auto iris switch on the lens.

A : Auto iris, remote operation

M : Manual iris

3. Auto iris override button

In the manual iris mode, the auto iris functions as long as this button is kept pressed.

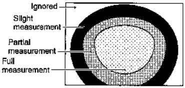


MULTI-ZONE LIGHT METERING

The GY-X2 utilizes the multi-zone light metering system in the auto iris mode. It is set to give the center area of the frame highest priority, with metering priority decreasing as the distance from the center increases.

Note

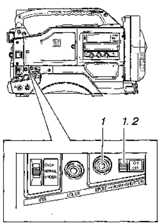
Multi-zone can not be seen in viewfinder



Multi-zone light metering

- Service Information:
In ALC operation (QUICK REC mode, etc.), speed setting of the electronic shutter is ineffectual because video level is controlled by the variable electronic shutter function (EFI).

ELECTRONIC SHUTTER



The electronic shutter mode which offers higher shutter speeds is effective when shooting fast-moving objects that may be analyzed later in playback. While the standard shutter speed is 1/60 (U Ver.)/1/50 (E ver.) second, the electronic shutter mode offers five speeds: 1/100 (U Ver.), 1/120 (E Ver.), 1/250, 1/500, 1/1000 and 1/2000 second.

1. Set the shutter select switch to ON. Each time the SPEED button is pressed, the shutter speed changes as follows:

→1/100 (U ver.) → 1/250 → 1/500 → 1/1000 → 1/2000
1/120 (E ver.)

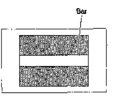
The selected shutter speed will be displayed for a few seconds on the viewfinder screen.

2. Set the shutter select switch to OFF to restore the shutter speed to standard 1/60 second (for U version), 1/50 second (for E version).

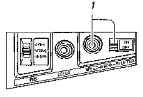
- The higher the shutter speed, the lower the sensitivity. Brighter lighting is necessary when using high shutter speeds. Do not use high shutter speeds in dimly lit places.
- In the auto iris mode, the iris is wider in the high speed mode than in the normal shutter mode. This also changes the depth of focus.
- When the high speed mode is used under fluorescent lighting, the picture may flicker.

- Service Information:
Vertical scan rate is easily found from the color of the belt appearing in the monitor screen.
  - When belt is white: Scan rate is higher than 60* Hz (Belt disappears by variable scan.)
  - When belt is black: Scan rate is lower than 60* Hz (Variable scan cannot deal with scanning at this rate)
    *50 Hz in E version camera.

VARIABLE SCAN FUNCTION



TV monitor



Note

This function does not respond to computer monitors with vertical scanning frequencies below 60 Hz (for U version), below 50 Hz (for E version).

■ **Variable scan**

This function sets the shutter speed to match the vertical scanning frequency of computer monitor screens.

When shooting computer display images with a video camera, a bright, over-exposed horizontal bar appears on the screen if the monitor's scanning speed is faster than the camera's shutter speed, and a dark, under-exposed bar appears if the scanning speed is slower.

Since the scanning frequency of the monitor in use may vary, set the camera's scanning speed while checking the image on the viewfinder screen.

- **Operation**

  Set the shutter switch from OFF to ON while keeping the speed button pressed. Then, press the speed button to change the speed. Each time the button is pressed, the speed is increased.

- **Response range:**

  The GY-X2 can respond to scanning frequencies ranging from 60.2 Hz to 1966.7 Hz in 254 steps (for U version), from 50.2 Hz to 1953.1 Hz in 304 steps (for E version).

Steps 1 to 100 correspond to 1/60.2 to 1/97.1 sec (1/50.2 to 1/73.7 sec for E version), and steps 101 to 200 correspond to 1/97.7 to 1/253.7 sec (1/74.0 to 1/139.5 sec for E version). The first 1 to 100 steps can respond to most computer displays. The scanning frequency used varies with each computer, so we recommend you check the image on the viewfinder screen or an external monitor.

USING AS A STUDIO CAMERA

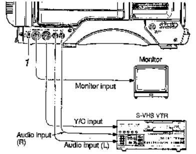
CONNECTION TO AN EXTERNAL VTR AN AUDIO EQUIPMENT

When recording the signals being shot with this unit onto another VTR, connect as illustrated on the left.

1. Select the video output select switch to "CAM" or "VTR".

- When using a VHS VTR (not S-VHS), the use of the VIDEO OUT connector is recommended.
- The VITC time code can be inserted into the signal output from the VIDEO OUT connector.
- The start/stop trigger signal cannot be delivered to the external VTR.

Note
When power switch is turned from "SAVE1" to "ST-BY" mode, audio signal may be interrupted and video signal may have noise.
If it is connected with other units, using the camera with "ST-BY" mode is recommended.



GENLOCKING

When multiple camera signals are processed via an SEG for fades, mixes, wipes, etc., all cameras must be synchronized by genlocking. For this purpose, apply a composite video signal (VBS) or black burst (BB) to the camera's GENLOCK INPUT terminal.

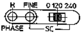
- It is not possible to genlock this unit with the VTR playback signal. This could cause a sync failure or hue fluctuations. This is not due to any defect of the unit, but because the VTR playback signal contains timebase errors corresponding to the rotary system's wow and flutter.
  If the VTR playback signal is to be used as a reference signal, correct it using a timebase corrector.

Phase adjustment

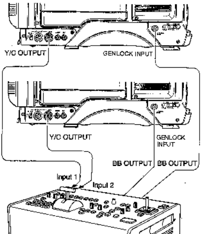
The figure shows an example of a camera-SEG system. When two or more cameras are used, the horizontal phase and color phase of their output signals must coincide with each other with respect to the reference signal externally applied to the cameras.

For adjustment, use the following switches and controls on the left side of the camera.

Horizontal sync phase: H control
Color sync phase: Coarse switch 0, 120°, 240°
FINE control ±60°



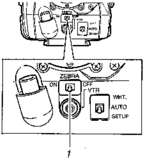
- For adjustments, consult the dealer from whom you purchased this unit or an authorized JVC Service agent.



• Service information:
For adjustment of genlock with use of an SEG, refer to the following instructions.

	Service Manual No.	Reference Page (Item) of Instructions
•KM-1600	No. 60026	Page 8 (System adjustment)
•KM-D600	No. 60041, 60041R	Page 12 (System adjustment)
•KM-2500	No. 60001	Page 10 (System adjustment)

VIDEO LEVEL INDICATION

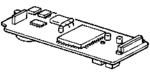


A zebra pattern shows the portion of the video signal of which is about 85 % to 95 %. Refer to this indication when adjusting the iris manually, or choosing gain or shutter settings.

1. ZEBRA switch ON : Indication on
ZEBRA switch OFF : Indication off

TIME CODE GENERATOR SA-R200 (Optional)

SA-R200 TIME CODE GENERATOR



The SA-R200 is a time code generator board specifically designed for installation in the GY-X2. SMPTE-standard LTC or VITC time code recording is possible. (LTC is recorded on the AUD-2 normal audio track.)

- Service Information:
The line 17(11) is occupied for recording the AEQ (Automatic Equalizer)
reference signal. Do not select the line 17(11) for VITC insertion.
If you want to modify the setting, refer to the service manual (no. 9277 for U version/No. 9288 for E version)

for U version

The line 17 is occupied for recording the AEQ (Automatic Equalizer) reference signal. Do not select line 17 for VITC insertion. If you want to modify the setting, consult your JVC service agent.

for E version

The line 11 is occupied for recording the AEQ (Automatic Equalizer) reference signal. Do not select line 11 for VITC insertion. If you want to modify the setting, consult your JVC service agent.

- If the time code has run for more than 10 minutes in the Free Run mode, it will keep running for at least 30 minutes even after the recorder's power is turned off.

Note

- **When the AEF is set to "QUICK" in the Rec Run mode, time code continuity will be lost at the edit point.**
- If the Record-Pause mode is engaged during time code recording in the Rec Run mode, time code data will be missing for several frames at the point where recording is re-started.
- Since the time code is not continuous, it is a good practice to allow at least 5 seconds of record time at the start of each shot so that the scene can be successfully edited later. Edit controllers must have continuous time code during preroll.

INSTALLATION

The SA-R200 is designed to be installed inside the GY-X2.
For more details on installation, consult your localJVC service agent.

LINE SELECTION

The SA-R200 utilizes the VITC system that inserts the time codes into the vertical blanking.

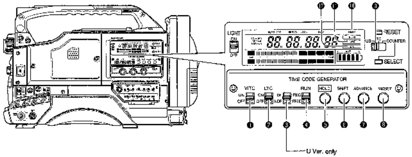
for U version

Lines on which VITC data is to be inserted are preset at the factory: 16 H and 18 H.
Lines can be selected in the range from 10 H to 25 H (except for 17 H). For details, consult your JVC service agent.

for E version

Lines on which VITC data is to be inserted are preset at the factory: 19 H and 21 H.
Lines can be selected in the range from 7 H to 22 H (except for 11 H). For details, consult your JVC service agent.

TIME CODE GENERATOR – CONTROLS AND OPERATIONS



① VITC ON/OFF switch
ON : To record VITC time codes
OFF: VITC time codes are not recorded.

② LTC ON/OFF switch
ON : To record LTC time codes. When set to this position, AUD-2 normal audio cannot be recorded.
OFF: LTC time codes are not recorded.

③ DF/NDF mode select switch (U-Ver. only)
DF : To record time codes in the drop-frame mode.
NDF: To record time codes in the non-drop-frame mode.

> **Note on Drop-Frame**
> The SA-R200 time code generator separates the frame pulse of the supplied video signal for sync. When the frame pulse in the video signal is counted at 60 fields (30 frames) per second and converted into time, this results in time error accumulating with elapsed time since the actual number of fields per second is 59.94. To compensate for this and match the tape time with real time, some frames must be dropped.

④ RUN REC/FREE RUN switch
REC : The time code runs only during recording. (Rec Run mode; used to time the recording)
FREE: The time code runs in real time, regardless of the recorder's operating mode. (Free Run mode; used when operating in real time, as a clock)

⑤ HOLD button
Used when setting the time codes and user bits.

⑥ SHIFT button
Shifts the blinking digit to the right.

⑦ ADVANCE button
Advances the value of the blinking digit.

⑧ PRESET button
Transfers the data set with the HOLD,SHIFT,and ADVANCE buttons to the time code generator.

⑨ UB/TC/COUNTER select switch
Selects the display mode on the counter.

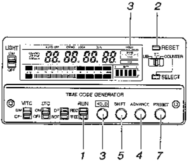
UB	: Displays user bits.
TC	: Displays time code data.
COUNTER	: Displays tape counter modes selected with the SELECT button.

⑩ HOLD indicator
Comes on when the HOLD button is pressed.

⑪ VITC indicator
Comes on when VITC is recorded.

⑫ LTC indicator
Comes on when LTC is recorded.

TIME CODE SETTING

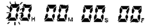

3
2
LIGHT
ON
OFF
RESET
UB
TC
COUNTER
SELECT
TIME CODE GENERATOR
VITC
LTC
ON
OFF
DF
NDF
RUN
REC
FREE
HOLD
SHIFT
ADVANCE
PRESET
1
3
5
4
7

Either the current time or any required time can be set.

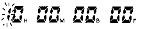
1. Set the RUN REC/FREE switch as desired.

2. Set the UB/TC/COUNTER select switch to "TC".

3. Press HOLD for more than 2 seconds.
- The counter resets with the leftmost digit blinking.
- The HOLD indicator comes on.


00H
00M
00S
00F

4. Press ADVANCE.
This advances the value of the blinking digit. Set to the desired value.


10H
00M
00S
00F

5. Press SHIFT.
The blinking digit shifts to the right.

6. Repeat steps 4 and 5 until all data is set.

Note
The maximum seting range is 23:59:59:29. Any value that exceeds this will be rejectd.

7. Press PRESET.
The preset data will be transferred to the time code generator. The HOLD indicator goes off and the counter stops blinking.
- In the Free Run mode, time code starts running.
- In the Rec Run mode, time code starts running when the Record mode is engaged.

Notes
- When you want to correct the data, repeat steps 3 to 7.
- If you mistakenly press the HOLD button, press it again to cancel.

USER BIT SETTING

"User bits" is a portion of the time code signal allocated to the user. It can be used to record the operator number or reel numbers.
User bits are an 8-digit hexadecimal number, each digit of which can have values from "0" to "F". User bits are recorded on the tape together with time data.

1. Set the UB/TC/COUNTER select switch to "UB".

2. Press HOLD for more than 2 seconds.
- Counter shows "00:00:00:00" with leftmost digit blinking.
- The HOLD indicator will light.

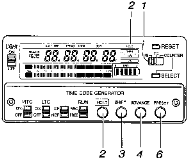
3. Press ADVANCE to set the value of the blinking digit as desired.
- All 8 digits can be changed from "0" to "F".

4. Press SHIFT to move the blinking digit.

5. Repeat steps 3 and 4 until all data is set.

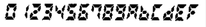
6. Press PRESET.
- The preset data will be transferred to the time code generator.
- Hold indicator goes off and the counter stops blinking.
- User bit data will not change regardless of the setting of the RUN REC/FREE switch.

Note
- When you want to correct the data, repeat steps 2 to 6.
- If you mistakenly press the HOLD button, press it again to cancel.


2
1
LIGHT
ON
OFF
88.88.88.88.
RESET
UB
TC
COUNTER
SELECT
TIME CODE GENERATOR
VITC
LTC
RUN
ON
OFF
ON
OFF
DF
NDF
REC
FREE
HOLD
SHIFT
ADVANCE
PRESET
2
3
4
6

Usable characters and their displays

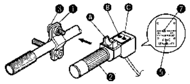
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

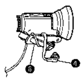

0 1 2 3 4 5 6 7 8 9 A b C d E F

SA-R200 SPECIFICATIONS

Signal system : SMPTE-standard
Time set : 8 digits (hours, minutes, seconds, frames)
User bits : 8 digits
Power consumption: 0.05 W

REMOTE TRIGGER/ZOOM SERVO HZ-ZS13BU (optional)





- Remotely control the VTR Trigger, RET (Auto Review), and the Zoom servo by connecting this to the lens servo.
- Remote manual focus control is possible with the HZ-FM15U (Canon) or the HZ-FM13U (Fujinon).
- Controls are extended 80 cm.

Installation Notes:

- For the Canon Lenses the Lens select switch should be set to C, for all others set to F.
- Normally 8-pin lenses require the VTR select switch to be set to the "Lock" position, and 12-pin lenses require the "Nonlock" position. Check your lens manual.

Operation Notes:

- Do not zoom manually while in the automatic mode. This can damage the lens servo.
- Zoom speed may be different from lens zoom lever.
- Leave the Camera and Lens Triggers in the Off position.

Controls and Attachments:

Ⓐ Zoom Lever (left/right operation)
Ⓑ RET Switch
Ⓒ VTR Trigger
❶ Tripod Arm Mount
❷ Handle
❸ Handle angle Adjustment Screw
❹ Lens servo Connector
(Wrap cable around lens grip for safety.)
❺ Lens Select Switch
❻ Set Lens servo switch to SERVO.
❼ Set VTR trigger select switch for lens type.

JVC SERVICE FUNCTION OPTIONS

AVAILABLE FROM JVC SERVICE CENTER ONLY

- Maximum GAIN reduction from +18 to +9.
- ALC mode without Full Auto White can be assigned to maximum gain position.
- Full Auto White only can be assigned to White Balance Memory 2.
- The Lens trigger mode can be changed from a locked to a non-locked mode for user specified lens accessory.

IN CASE OF DIFFICULTY (TROUBLESHOOTING GUIDE)

Symptoms	Check Points
No power is applied to the unit.	• Is the power supply unit properly connected? • Is the battery pack charged?
Cassette cannot eject after the power is turned on.	• The power supply unit's capacity may be insufficient. Check the power voltage. • If the power is turned off within 1 second of opening the cassette holder, the cassette holder may not close properly.
Recording cannot be started.	• Is the safety tab on the cassette removed? Reseal the slot with adhesive tape.
Playback picture is blurred or interrupted.	• Video heads may be dirty. Head cleaning is necessary. Consult your JVC dealer.
Noise appears during playback.	• Adjust the tracking control.
VTR operation is not possible.	• Is the power switch set to SAVE1 or 2? Set it to ST-BY.
Tape will not play, rewind or fast-forward.	• Is the tape already fully rewound or fast-forwarded?
Viewfinder image looks dark or unclear.	• Adjust the contrast control. • Is the filter switch set to 5600+ND? • Is the iris closed? • Is the shutter speed too fast? • Is the viewfinder caibe correctly connected?
Normal Audio 2 cannot be recorded.	• The LTC time code switch may be on (even without the SA-R200 Time Code Generator). Audio 2 is not recorded.
No picture, No playback from VTR video out connector.	• VIDEO OUT SELECT switch may be set to OFF or CAM. Switch this to VTR.

ACCESSORY LIST

Standard Accessories

Electronic viewfinder : VF-P115
Tripod base : KA-510
Microphone : SCV2084-001
Carrying bag : SCV2099-003
Battery holder : BH-P27

Optional Accessories

Studio viewfinder : VF-P400 (4-INCH)
: VF-P550B (5-INCH)
Power zoom lens : YH13X7.5K12
AC power adapter : AA-P250
DC battery pack : NB-G1 (12 V, 2.2 AH)
Microphone : MV-P612, MV-P602, M-K50
Microphone holder : KA-A30
Remote trigger/
Zoom servo control : HZ-ZS13BU

SPECIFICATIONS (for U version)

• CAMERA SECTION

Image pickup device : 1/2-inch interline CCDs
Color separation
  optical system : 3-color separation prism
Number of
  effective pixels : 380,000 pixels
Color system : NTSC (R-Y, B-Y encoder)
Color bars : Full color type
Sync system : Internal/external sync (auto)
Lens mount : Bayonet system
  (FB 35.74 mm, 1/2" CCD cameras)
Optical filter : 3200 K, 5600 K, 5600 K + ND
Sensitivity : F7, 2000 lux
Gain : 0, +9 dB, +18 dB, LOLUX
Minimum illumination : 10 lux with F1.4, +18 dB gain
Lolux minimum
  illumination : 3 lux with F1.4
S/N ratio : 60 dB (typical)
Horizontal resolution : 660 lines (luminance signal)
Registration : 0.05 % or less (excluding lens distortion)
Contour correction : Horizontal dual-edged,
  Vertical dual-edged
Shutter speed : 1/100, 1/250, 1/500, 1/1000, 1/2000
Variable scan : 60.2 Hz to 1968.7 Hz

• VTR SECTION

Format : S-VHS standard
Tape speed : 33.35 mm/sec
Record/playback time : 120 min (with T-120 cassette)
Fast forward/
  Rewinding time : 4 min. 30 sec or less
  (with T-120 cassette)
Hi-Fi sound D range : More than 80 dB
Horizontal resolution : Color 400 lines or more (S-VHS mode)
  Color 240 lines or more (VHS mode)
Video S/N ratio : 46 dB (S-VHS mode)
  (color) 45 dB (VHS mode)
Audio S/N ratio : 48 dB (NR : ON)
  44 dB (NR : OFF)

• INPUT/OUTPUT SIGNALS

Video signal output : 1 Vp-p/75 ohms (BNC)
Lens : 12-pin connector
Y/C signal output : Y ; 1 Vp-p/75 ohms,
  C ; 0.286 Vp-p/75 ohms (Burst),
  7-pin connector
DC input : 12 V DC (11.0 to 16.0 V DC)
Genlock input : VBS 1 Vp-p or BB 0.43 Vp-p/75 ohms
  (BNC)
Microphone input : –52 dBs (6-pin), Unbalanced
Audio input : +4 dBs/10 kohms (select the switch)
  –60 dBs/3 kohms (select the switch),
  (XLR3), Balanced
Audio output : –8 dBs/1 kohm (RCA), Unbalanced
Earphone output : –60 dBs to –12 dBs/8 ohms
  (ø3.5 mini-jack)

• GENERAL

Power consumption : 25.2 W (including the lens and viewfinder)
  viewfinder)
Weight : Approx. 6 kg (13 lbs) (incl. viewfinder)
Operating
  temperature range : 0°C to +40°C (+32°F to +104°F)
Storage
  temperature range : –20°C to +60°C (–4°F to +140°F)

• 1.5-inch VIEWFINDER VF-P115

CRT : 1.5 inch
Resolution : 500 lines or more
Input signal : Composite 1 Vp-p, high impedance
Available functions : Top tally lamp (with ON/OFF switch)
  Low battery indicator (RED)
  Recording indicator/tape trouble alarm
  (GREEN)
  Contrast control
  Brightness control
Diopter control : Provided
Power requirements : 12 V DC, 3 W

SPECIFICATIONS (for E version)

• CAMERA SECTION

Image pickup device : 1/2-inch interline CCDs
Color separation
  optical system : 3-color separation prism
Number of
  effective pixels : 390,000 pixels
Color system : PAL (R-Y, B-Y encoder)
Color bars : EBU colour bar
Sync system : Internal/external sync (auto)
Lens mount : Bayonet system
  (FB 35.74 mm, 1/2" CCD cameras)
Optical filter : 3200 K, 5600 K, 5600 K + ND
Sensitivity : F7, 2000 lux
Gain : 0, +9 dB, +18 dB, LOLUX
Minimum illumination : 10 lux with F1.4, +18 dB gain
Lolux minimum
  illumination : 3 lux with F1.4
S/N ratio : 58 dB (typical)
Horizontal resolution : 690 lines (luminance signal)
Registration : 0.05 % or less (excluding lens distortion)
Contour correction : Horizontal dual-edged,
  Vertical dual-edged
Shutter speed : 1/120, 1/250, 1/500, 1/1000, 1/2000
Variable scan : 50.2 Hz to 1053.1 Hz

• VTR SECTION

Format : VHS/S-VHS Europe standard
Tape speed : 23.39 mm/sec
Record/playback time : 180 min (with SE-180 cassette)
Hi-Fi sound D range : More than 80 dB
Horizontal resolution : Color 400 lines or more (S-VHS mode)
  Color 250 lines or more (VHS mode)
Video S/N ratio : 45 dB (S-VHS mode)
  (color) 43 dB (VHS mode)
Audio S/N ratio : 42 dB (NR : OFF)

• INPUT/OUTPUT SIGNALS

Video signal output : 1 Vp-p/75 ohms (BNC)
Lens : 12-pin connector
Y/C signal output : Y ; 1 Vp-p/75 ohms,
  C ; 0.3 Vp-p/75 ohms (Burst),
  7-pin connector
DC input : 12 V DC (11.0 to 15.0 V DC)
Genlock input : VBS 1 Vp-p or BB 0.45 Vp-p/75 ohms
  (BNC)
Microphone input : –52 dBs (6-pin), Unbalanced
Audio input : +4 dBs/10 kohms (select the switch)
  –60 dBs/3 kohms (select the switch),
  (XLR3), Balanced
Audio output : –6 dBs/1 kohm (RCA), Unbalanced
Earphone output : –60 dBs to –12 dBs/8 ohms
  (ø3.5 mini-jack)

• GENERAL

Power consumption : 25.2 W (including VF-P115 viewfinder)
Weight : Approx. 6 kg (13 lbs) (incl. VF-P115 viewfinder)
Operating
  temperature range : 0°C to +40°C (+32°F to +104°F)
Storage
  temperature range : –20°C to +60°C (–4°F to +140°F)

• 1.5-inch VIEWFINDER VF-P115

CRT : 1.5 inch
Resolution : 500 lines or more
Input signal : Composite 1 Vp-p, high impedance
Available functions : Top tally lamp (with ON/OFF switch)
  Low battery indicator (RED)
  Recording indicator/tape trouble alarm
  (GREEN)
  Contrast control
  Brightness control
Diopter control : Provided
Power requirements : 12 V DC, 3 W

No. 60075R

GY-X2

CAMERA HEAD SECTION

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4.	EXPLODED VIEWS AND PARTS LISTS	4 - 1
5.	CHARTS AND DIAGRAMS	5 - 1
6.	ELECTRICAL PARTS LIST	6 - 1

SECTION 1
SERVICE CAUTIONS AND DISASSEMBLY

1.1 RESET OF POWER BREAKER

This set is equipped with a power breaker for protecting circuits from overcurrent instead of power fuses.
To reconnect the power, reset the power breaker.

Note:When the power breaker is activated to cut off the power, make sure to investigate the cause and repair the failure before resetting it in order to avoid expansion of the failure.

1. Turn off not only the OPERATE switch of this set but also all the power switches of other devices that supply power to this set.
2. The power breaker Ⓐ is located at the rear bottom of the VTR section. Pressing the BREAKER button reconnects the power.

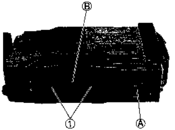


Fig. 1-1

1.2 SEPARATION OF CAMERA AND VTR SECTIONS FROM EACH OTHER

1. Remove two screws ① and detach the shoulder pad Ⓑ.
2. Remove four screws ②.

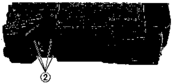


Fig. 1-2

3. Remove three screws ③ and detach the handle Ⓒ.
4. Remove two screws ④ and take off the side cover Ⓒ'.
5. Remove two screws ⑤ and remove the VTR section rearwards.

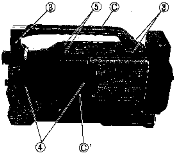


Fig. 1-3

6. The camera section and the VTR section are connected with the flat cable Ⓓ and the power cable Ⓔ.
Make sure to disconnect them with the connectors Ⓕ and Ⓖ after all power supplies are cut off.

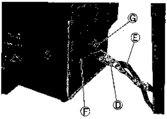


Fig. 1-4

1.3 REMOVAL OF OPTICAL BLOCK ASSEMBLY

1. Remove the both side covers of the camera section.
2. Remove two screws ⑥ respectively from the SE board and the CP board.

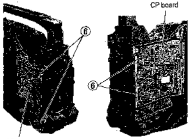


Fig. 1-5

3. The SE board and the CP board can be opened as shown below, and they can undergo servicing in this state.
4. Remove four screws ⑦ from the front panel Ⓗ.

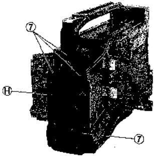


Fig. 1-6

5. Remove two screws ⑧ shown below.

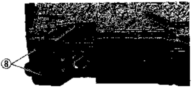


Fig. 1-7

6. Pull out the optical block frontwards together with the front panel Ⓗ.
(The optical block is connected with the MT board by the board connector Ⓘ.)

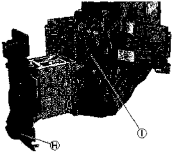


Fig. 1-8

7. Connection between the optical block (PR board) and the MT board is extendable with the extension cable (Part No. SCM0732).

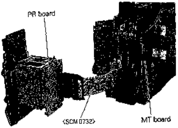


Fig. 1-9

Note: When reassembling the optical block, make sure of tight connection of the board connector Ⓘ with the MT board.

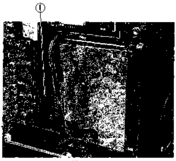


Fig. 1-10

1.4 REMOVAL OF OPTICAL FILTER ASSEMBLY

1. Remove the optical block assembly referring to the previous section 1.3.
2. Remove four screws ⑨ from the front frame.
3. Remove two hexagon head screws ⑩ from the filter knob Ⓙ and detach the filter knob.

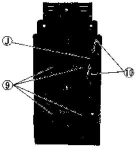


Fig. 1-11

4. Adjust the lens mount ring to position its knob Ⓚ as shown in the following picture (Fig. 1-12) and detach the portion Ⓛ of the front panel from the optical block assembly.
5. Slide the front panel Ⓗ by the lower part in the direction of the arrow and remove the front panel.

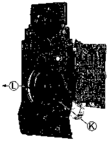


Fig. 1-12

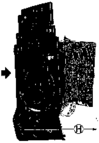


Fig. 1-13

6. Remove two screws ⑪ and detach the optical filter assembly.

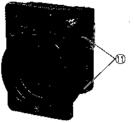


Fig. 1-14

1.5 REPLACEMENT OF CCD BLOCK

Note: If there is anything wrong in the CCD, it cannot be replaced alone since it is precisely glued to the prism.
In such a case, replace the CCD block as a whole.

1. Remove three screws ⑫ and detach the DR, PA and PR boards together with the frame Ⓜ.
2. Take off the front panel Ⓗ referring to the previous section 1.4.
3. Remove the optical filter assembly referring to the previous section.

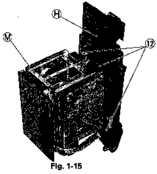


Fig. 1-15

Note: CCD blocks that are supplied as repair parts have not the front panel, DR, PA and PR boards at all.
When replacing the CCD block, fit it with the DR, PA and PR boards before assembling to the camera section.

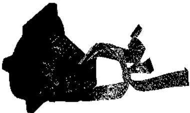
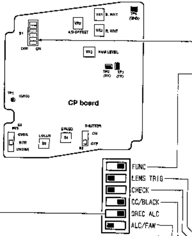


Fig. 1-16

1.6 FUNCTIONS OF CAMERA'S INTERNAL SWITCHES

Respective functions of internal switches of the camera are as follows.

1.6.1 Switches on CP board



⑤ QREC ALC switch

To select ALC (Auto video Level Control) in the QREC mode.

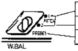
ON : ALC is activated in the QREC mode regardless of setting position of the GAIN switch.

OFF: ALC is inactivated and gain in the QREC mode depends on setting of the GAIN switch.

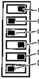
⑥ ALC/FAW switch (See Note)

To switch between ALC (Auto video Level Control) and FAW (Full time Auto White) functions. Depending on setting of this switch, functions of the GAIN switch and the W. BAL switch vary as shown below.

Setting of ALC/FAW switch	
ON	OFF
0 dB	0 dB
+6 or +9 dB	+6 or +9 dB
ALC	+9 dB or +18 dB



AUTO 1	AUTO 1
FAW	AUTO 2
PRESET	PRESET

Symbol No.	Switch Name	Initial Setting at Shipment
S1 [CP board]	MODE SELECT & CHECK switch	OFF ON  ON : OFF: NON LOCK OFF: NORMAL mode ON : CONTOUR ON ON : ALC ON in QREC mode OFF: FAW & ALC INHIBIT

① FUNCTION SELECT switch (U version only)

To change GAIN, V. SCVAN and ALC function modes.

Setting position	ON	OFF
GAIN setting	0 (•), +9 (••), +18 (•••) dB	0 (•), 6 (••), +9 (•••) dB
V. scan rate	*1/60.2 to 1/1966.7	*1/60 to 1/249.8
ALC range	0 to +18 dB	0 to +12 dB

This switch comes into effect only in the U-version. In the E-version, selection for respective modes are limited as shown in this box regardless of set positions of this switch. (In the E-version, V. scan rate is from 1/50.2 to 1953.1.)

② LENS TRIGGER SELECT switch

To set to ON or OFF according to the type of the VTR trigger button of the lens to be mounted on the camera.

ON : For the alternate type (lock type) trigger button

OFF: For the momentary type (on only during pressed) trigger button

③ CHECK MODE ON/OFF switch

To turn on/off the check mode of the CPU for convenience of servicing. For detail of the check mode, refer to the section 2 "Electrical Adjustment".

④ CONTOUR CORRECTION ON/OFF or BLACK ADJUST MODE ON/OFF switch

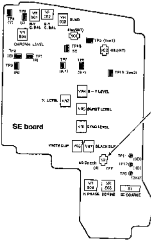
This switch differently functions depending on setting of the ③ CHECK MODE ON/OFF switch.

CHECK MODE switch setting	CC/BLACK ADJUST switch setting	Function	Description
ON	ON	Black Adjust Mode ON/ OFF switch	Black adjust mode. Black slice is off and black level increases.
	OFF		Normal check mode.
OFF	ON	Contour Correction ON/ OFF switch	CONTOUR : ON
	OFF		CONTOUR : OFF

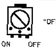
Note:

- The CPU reads setting states of the switches other than the CHICK MODE ON/OFF switch ③ and the CONTOUR CORRECTION ON/OFF switch ④ only when the power switch,is turned on. If those switches are otherwise set as the power is on, make sure to turn the power off once and again on.
- Differently from the ALC of the GY-X1 and KY-27 in its operational principle, the ALC of the GY-X2 adjusts sensitivity utilizing the electronic shutter together with in the sensitized mode. Accordingly, speed setting of the electronic shutter is ineffectual in the sensitized mode and flickering may occur under some lighting conditions. Please give a detailed explanation about this function and possible phenomenon to users.

1.6.2 Switches on SE board


TP4
(Y)
TP8
(C)
VR 501
R-Y C. BAL
VR 502
B-Y C. BAL
VR 503
QUAD
VR 504
CHROMA LEVEL
4fsc(EXT)
YC1
TP9 (fsc1)
TP13 SC
YC2
TP2
(G)
TP1
(R)
TP3
(B)
TP7
TP6
TP10 (fsc2)
VR4 B-Y LEVEL
Y. LEVEL
VR2
VR5 BURST LEVEL
SE board
VR3 SYNC LEVEL
WHITE CLIP
VR6
VR7 BLACK CLIP
S2
AB CHECK
ON
OFF
TP11
TP12
TP5
VR 506
H. PHASE
VR 505
SC FINE
S1
SC COARSE

AUTO BLACK OPERATION CHECK switch

Symbol No.	Switch Name	Initial Setting at Shipment
S2 (SE board)	AUTO BLACK OPERATION CHECK switch	

During Auto Black adjustment of color video cameras, the lens iris is closed and the video amplifier's gain is increased to the maximum. Therefore, video output generally contains much noises during auto black adjustment.

To avoid such problem and to get noise inconspicuous in output image, this model declines gain of the video amp. on the SE board during auto black operation in order to reduce noise from the video output.

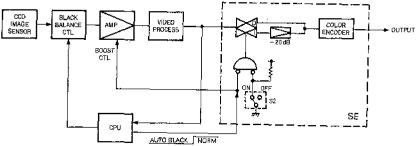
If this switch is set to "ON" in servicing, it makes easy to check auto black operation without gain decrease on the SE board.

ON : Auto black operation can be observed on the screen.

OFF: Reduces screen noise resulting from gain increase in auto black operation.

Note: This switch is provided for ON/OFF of screen noise reduction function in auto black operation only, and its setting does not affect the CPU's auto black operation at all.

- **For checking black balance status with a vectorscope or the like in the black adjustment mode set by use of the check switch (S1) on the CP board, make sure to set this switch to "ON" position. Otherwise measurement brings incorrect results.**


CCD IMAGE SENSOR
BLACK BALANCE CTL
AMP
VIDEO PROCESS
BOOST CTL
-20 dB
COLOR ENCODER
OUTPUT
ON
OFF
S2
SE
CPU
AUTO BLACK
NORM

Concept of Auto Black circuit (Different from actual Auto Black circuit in detail)

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
Replace only with specified part numbers.
Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
Caution for continued protection against fire hazard.
Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:

1) Insulation Tape	3) Spacers	5) Barrier
2) PVC tubing	4) Insulation sheets for transistors	

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

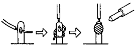


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

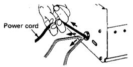


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

1) **Connector part number :** E03830-001
2) **Required tool :** Connector crimping tool of the proper type which will not damage insulated parts.
3) **Replacement procedure**
   (1) Remove the old connector by cutting the wires at a point close to the connector.
   Important : Do not reuse a connector (discard it).

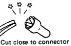


Fig. 3

   (2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

Fig. 4

   (3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

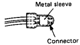


Fig. 5

   (4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

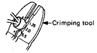


Fig. 6

   (5) Check the four points noted in Fig. 7.

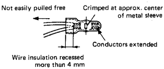

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

●Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

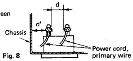


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

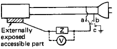


Fig. 9

5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

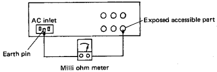


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

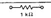
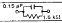
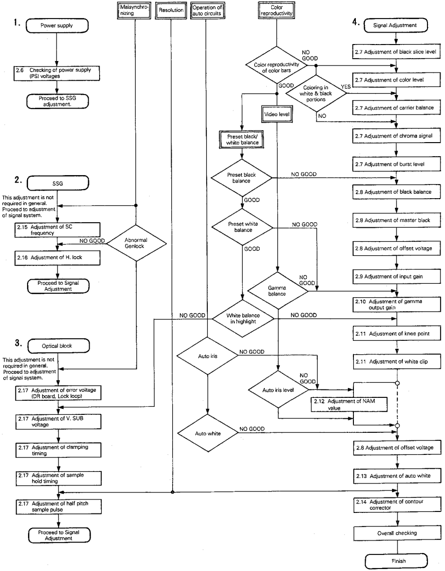
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 FLOWCHART OF ELECTRICAL ADJUSTMENTS

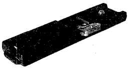
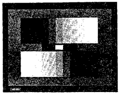
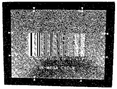

Maisynchro-nizing
Resolution
Operation of auto circuits
Color reproductivity
1. Power supply
2.6 Checking of power supply (PS) voltages
Proceed to SSG adjustment.
2. SSG
This adjustment is not required in general. Proceed to adjustment of signal system.
2.15 Adjustment of SC frequency
NO GOOD
Abnormal Genlock
2.16 Adjustment of H. lock
Proceed to Signal Adjustment
3. Optical block
This adjustment is not required in general. Proceed to adjustment of signal system.
2.17 Adjustment of error voltage (DR board, Lock loop)
2.17 Adjustment of V. SUB voltage
2.17 Adjustment of clamping timing
2.17 Adjustment of sample hold timing
2.17 Adjustment of half pitch sample pulse
Proceed to Signal Adjustment
Color reproductivity of color bars
NO GOOD
GOOD
Coloring in white & black portions
YES
NO
Video level
Preset black/ white balance
Preset black balance
NO GOOD
GOOD
Preset white balance
NO GOOD
GOOD
Gamma balance
NO GOOD
White balance in highlight
NO GOOD
NO GOOD
Auto iris
NO GOOD
Auto iris level
NO GOOD
Auto white
NO GOOD
4. Signal Adjustment
2.7 Adjustment of black slice level
2.7 Adjustment of color level
2.7 Adjustment of carrier balance
2.7 Adjustment of chroma signal
2.7 Adjustment of burst level
2.8 Adjustment of black balance
2.8 Adjustment of master black
2.8 Adjustment of offset voltage
2.9 Adjustment of input gain
2.10 Adjustment of gamma output gain
2.11 Adjustment of knee point
2.11 Adjustment of white clip
2.12 Adjustment of NAM value
2.8 Adjustment of offset voltage
2.13 Adjustment of auto white
2.14 Adjustment of contour corrector
Overall checking
Finish

2.2 REQUIRED EQUIPMENT AND STANDARD SETUP FOR ELECTRICAL ADJUSTMENT

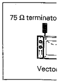
2.2.1 Necessary instruments

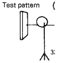
1. Lighting apparatus (3200 K halogen lamps)
2. DC voltmeter (digital voltmeter is preferable)
3. Oscilloscope (dual trace type is preferable)
4. Frequency counter
5. Color TV monitor
6. Waveform monitor
7. Vectorscope
8. 12 V DC power supply (AC power adapter AA-P250)
9. Camera lens : YH13X7.5K12
10. Viewfinder (VF-P115)

3.2.2 Special implements for electrical adjustments

1	Tripod base	2	Gray scale chart	3	In-megacycle chart
	< KA-510, attachment > 		< Part No. GS2L > 		< Part No. RESC-010 > 

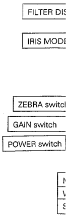
2.2.3 Standard s


75 Ω terminato
Vecto


Test pattern
(
3

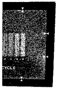
2.2.4 Standard s

Siwtches that need
low.
For adjustments des
as follows unless c
procedures.

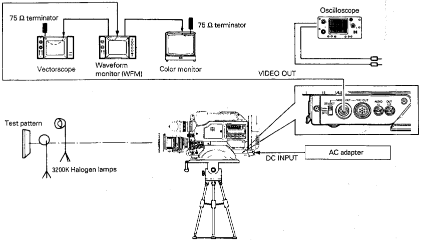

FILTER DIS
IRIS MODE
ZEBRA switc
GAIN switch
POWER switch

:ycle chart

RESC-010 >



2.2.3 Standard setup

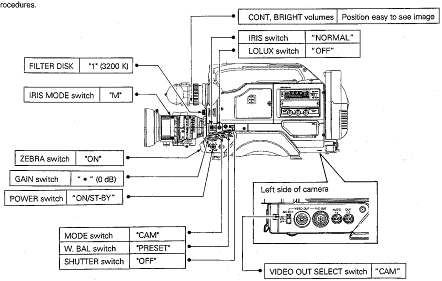


75 Ω terminator
75 Ω terminator
Oscilloscope
Vectorscope
Waveform monitor (WFM)
Color monitor
VIDEO OUT
Test pattern
3200K Halogen lamps
DC INPUT
AC adapter

2.2.4 Standard setting of switches

Siwtches that need to reset for adjustment are shown below.

For adjustments described in this section, set these switches as follows unless otherwise indicated in the adjustment procedures.



CONT, BRIGHT volumes | Position easy to see image
IRIS switch | "NORMAL"
LOLUX switch | "OFF"
FILTER DISK | "1" (3200 K)
IRIS MODE switch | "M"
ZEBRA switch | "ON"
GAIN switch | " • " (0 dB)
POWER switch | "ON/ST-BY"
Left side of camera
MODE switch | "CAM"
W. BAL switch | "PRESET"
SHUTTER switch | "OFF"
VIDEO OUT SELECT switch | "CAM"

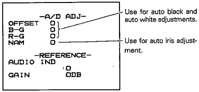
2.3 BEFORE PROCEEDING TO ADJUSTMENT

2.3.1 Check mode

The CPU of this camera has a servicing mode which is convenient for electrical adjustments. This mode is called the Check Mode of the CPU.

● **Procedure to activate check mode**

Set S1-3 of the CHECK switch on the CP1 board to "ON", and the check mode is activated with display of the adjustment menu in the viewfinder.

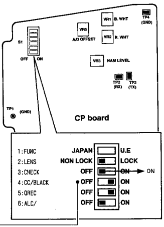


```
      -A/D ADJ-
OFFSET   0 }
B-G      0 }
R-G      0 }
NAM      0

    -REFERENCE-
AUDIO IND
              :0
GAIN          0DB
```

Use for auto black and auto white adjustments.
Use for auto iris adjustment.

- Adjustment menu on Viewfinder -



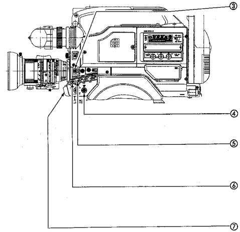
VR1 B. WHT
TP4 (GND)
VR5
A/D OFFSET
VR2 R. WHT
S1
OFF
ON
VR3 NAM LEVEL
TP2 (RX)
TP3 (TX)
TP1 (GND)
CP board
1:FUNC
2:LENS
3:CHECK
4:CC/BLACK
5:QREC
6:ALC/
JAPAN
U.E
NON LOCK
LOCK
OFF
ON
ON
OFF
ON
OFF
ON
OFF
ON

● **Camera status in check mode**

During the check mode, respective parts of camera is in the following status.

① Contour is automatically turned off during the check mode.

② Function of the CONTOUR ON/OFF switch (S1-4 on the CP board) changes.
During the check mode, this switch functions as the ON/OFF switch of black adjustment mode.
ON : Black adjustment mode
Black slice is inactivated and the black level increases.
OFF: Normal check mode



③ AUTO IRIS MODE : Regardless of setting position of the IRIS MODE switch, camera enters the "NORMAL" mode.

④ QUICK REC SWITCH : Pressing this switch does not start QUICK RECORDING.

⑤ DISP SELECT : Display in the viewfinder is the check mode menu which cannot be replaced by pressing this switch.

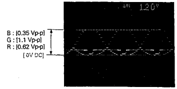
⑥ GAIN switch : Setting positions of this switch correspond to " • " (0 dB), " •• " (+9 dB) and " ••• " (+18 dB) respectively.

⑦ AUTO switch : During the check mode, neither auto white adjustment nor auto black adjustment is activated by this switch.

2.4 VIDEO CIRCUIT BLOCK DIAGRAM

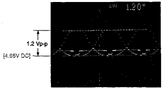
Note:
Waveforms and levels shown in the following diagrams are measured with illumination whose color temperature is 3200K.
Voltages shown in blue square brackets [ ] are just for reference, and actually measured values slightly vary depending on camera.

B. G. R Signal
of GRAY SCALE



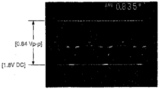
H-rate

B. G. R Signal
of GRAY SCALE



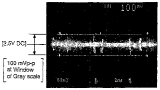
H-rate

B. G. R Signal
of GRAY SCALE



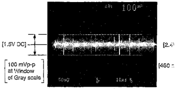
H-rate

V CONTOUR (TP4)
of GRAY SCALE

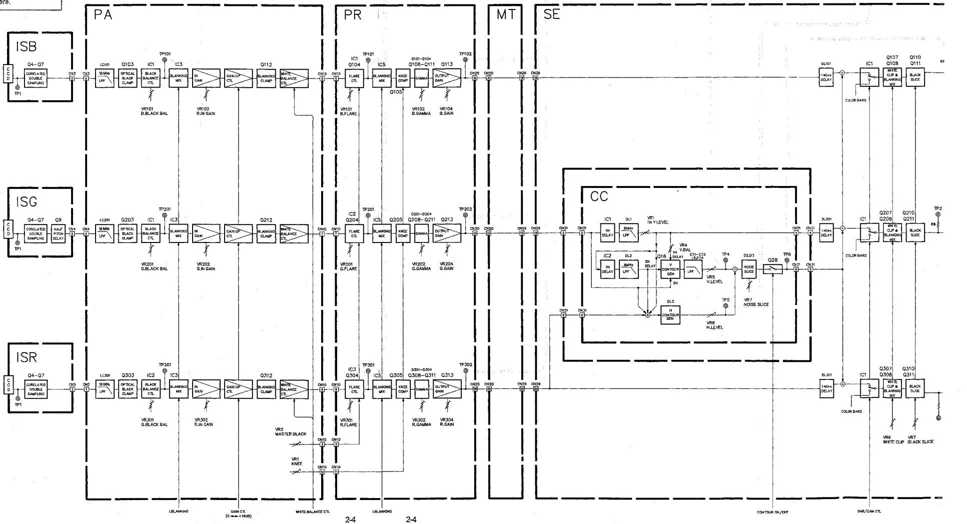


V-rate

H CONTOUR (TP5)
of GRAY SCALE

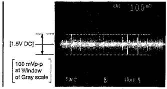


H-rate



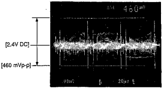
PA
PR
MT
SE
ISB
ISG
ISR
CCD
TP1
Q4~Q7
CORELATED DOUBLE SAMPLING
Q9
HALF PITCH DELAY
CN3
CN4
CN5
LC101
LC201
LC301
10 MHz LPF
Q103
Q203
Q303
OPTICAL BLACK CLAMP
IC1
IC2
BLACK BALANCE CTL
TP101
TP201
TP301
IC3
BLANKING MIX
IN GAIN
GAIN UP CTL
Q112
Q212
Q312
BLANKING CLAMP
WHITE BALANCE CTL
VR101 B.BLACK BAL
VR102 R.IN GAIN
VR201 G.BLACK BAL
VR202 G.IN GAIN
VR301 G.BLACK BAL
VR302 R.IN GAIN
CN10
Q104
Q204
Q304
FLARE CTL
IC5
Q105
Q205
Q305
KNEE COMP
D101~D104
D201~D204
D301~D304
Q108~Q111
Q208~Q211
Q308~Q311
GAMMA
Q113
Q213
Q313
OUTPUT GAIN
TP102
TP202
TP302
VR101 B.FLARE
VR102 B.GAMMA
VR104 B.GAIN
VR201 G.FLARE
VR202 G.GAMMA
VR204 G.GAIN
VR301 R.FLARE
VR302 R.GAMMA
VR304 R.GAIN
VR2 MASTER BLACK
VR1 KNEE
CN20
CN29
CN31
CC
IC1
DL1
1H DELAY
8MHz LPF
VR1 1H Y LEVEL
VR4 V.BAL
1H DELAY
IC2
DL2
2H DELAY
Q16
V CONTOUR GEN
DH
C71~C73 L6,R74
LPF
VR5 V.LEVEL
TP4
D2,D3
NOISE SLICE
VR7 NOISE SLICE
Q28
TP6
DL3
H CONTOUR GEN
VR6 H.LEVEL
TP5
DL101
DL201
DL301
140ns DELAY
COLOR BARS
Q107 Q108
Q207 Q208
Q307 Q308
WHITE CLIP & BLANKING MIX
Q110 Q111
Q210 Q211
Q310 Q311
BLACK SLICE
TP2
VR6 WHITE CLIP
VR7 BLACK SLICE
I.BLANKING
GAIN CTL (0 ←→ +18dB)
WHITE BALANCE CTL
I.BLANKING
CONTOUR ON/OFF
BAR/CAM CTL

H CONTOUR (TP5)
of GRAY SCALE

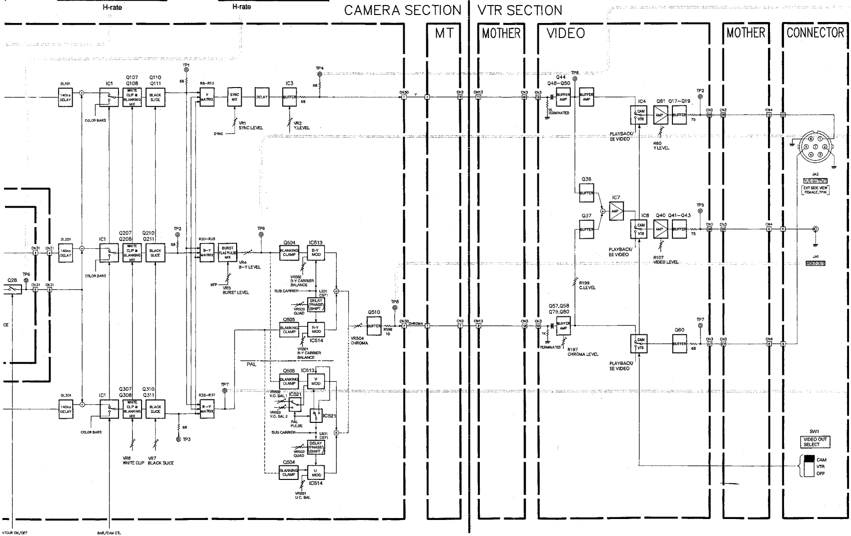


H-rate

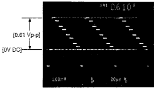
CONTOUR (TP6)
of GRAY SCALE



H-rate

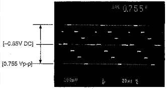

CAMERA SECTION
VTR SECTION
MT
MOTHER
VIDEO
MOTHER
CONNECTOR
DL101
140ns DELAY
IC1
COLOR BARS
Q107
Q108
WHITE CLIP & BLANKING MIX
Q110
Q111
BLACK SLICE
TP1
68
R8–R13
Y MATRIX
SYNC MIX
VR1
SYNC LEVEL
SYNC
DELAY
IC3
BUFFER
68
VR2
Y.LEVEL
TP4
68
CN30
Y
CN2
CN13
CN3
CN3
Q44
Q48–Q50
TP6
BUFFER AMP
BUFFER AMP
1K
TERMINATED
IC4
CAM
VTR
Q61
AMP
Q17–Q19
BUFFER
75
TP2
PLAYBACK/
EE VIDEO
R60
Y LEVEL
CN3
CN3
CN4
JA2
Y/C OUTPUT
EXT SIDE VIEW
FEMALE,7PIN
CN31
CN31
DL201
140ns DELAY
IC1
COLOR BARS
Q207
Q208
WHITE CLIP & BLANKING MIX
Q210
Q211
BLACK SLICE
TP2
68
R20–R28
B–Y MATRIX
BURST FLAG PULSE MIX
VR4
B–Y LEVEL
BFP
VR5
BURST LEVEL
TP6
Q504
BLANKING CLAMP
IC513
B-Y MOD
VR502
B-Y CARRIER
BALANCE
SUB CARRIER
L501
C571
DELAY (PHASE SHIFT)
VR503
QUAD
Q505
BLANKING CLAMP
R-Y MOD
IC514
VR501
R-Y CARRIER
BALANCE
Q510
BUFFER
R596
10
VR504
CHROMA
TP8
CN30
CHROMA
Q28
TP6
CN31
CN31
CE
Q36
BUFFER
Q37
BUFFER
IC7
AMP
IC8
CAM
VTR
Q40
AMP
Q41–Q43
BUFFER
75
TP5
PLAYBACK/
EE VIDEO
R107
VIDEO LEVEL
JA1
VIDEO OUT
R199
C.LEVEL
Q57,Q58
Q79,Q80
BUFFER AMP
1K
TERMINATED
R197
CHROMA LEVEL
CAM
VTR
Q60
BUFFER
68
TP7
PLAYBACK/
EE VIDEO
PAL
Q505
BLANKING CLAMP
IC513
V MOD
VR502
V.C. BAL 1
IC521
VR503
V.C. BAL 2
IC521
PAL PULSE
SUB CARRIER
L501
C571
DELAY (PHASE SHIFT)
VR503
QUAD
Q504
BLANKING CLAMP
U MOD
IC514
VR501
U.C. BAL
DL301
140ns DELAY
IC1
COLOR BARS
Q307
Q308
WHITE CLIP & BLANKING MIX
Q310
Q311
BLACK SLICE
68
TP3
VR6
WHITE CLIP
VR7
BLACK SLICE
R32–R37
R–Y MATRIX
TP7
SW1
VIDEO OUT SELECT
CAM
VTR
OFF
NTOUR ON/OFF
BAR/CAM CTL

Y VIDEO (TP4)
of COLOR BARS



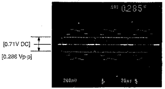
H-rate

B-Y (TP6)
of COLOR BARS

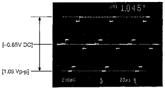


H-rate

CHROMA (TP8)
of COLOR BARS

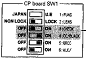


R-Y (TP7)
of COLOR BARS

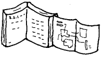


2.5 TABLE OF MEASURING POINTS, ADJUSTMENT PARTS AND ADJUSTMENT LEVELS OF VIDEO SYSTEM

	Item	Setting of Switches, etc.	GAIN SW	CHECK SW BLACK/CC SW	Measuring Points ◎	Adjustment Parts ⏀	Adjustment Levels ☆	Reference section (Page)
COLOR ENCODER	•Black slice level	•MODE switch → BARS	●	CHECK OFF ON BLACK	SE ◎TP2	SE ⏀VR7, BLACK SLICE	Blanking level and pedestal level are equal to each other.	2.7-2 (p. 2-7)
	•Y. SYNC SETUP				VIDEO OUT	SE ⏀VR2, Y LEVEL ⏀VR1, SYNC LEVEL	NTSC PAL Y 0.55V 0.7V SYNC 0.286V 0.3V SET UP 53mV —	2.7-3 (p. 2-8)
	•Carrier balance					SE ⏀VR501, R-Y/U C BAL ⏀VR502, B-Y/V C BAL ⏀VR507, V. C. BAL2	Min. carrier leak in white and black portions	2.7-4 (p. 2-8)
	•Chroma level color vector					SE ⏀VR4, B-Y LEVEL ⏀VR503, QUAD ⏀VR504, CHROMA LEVEL	Every dot positions in the ⊞ mark.	2.7-5 (p. 2-9)
	•Burst level					SE ⏀VR5, BURST LEVEL	0.286 Vp-p [NTSC] 0.3 Vp-p [PAL]	2.7-6 (p. 2-9)
BLACK	•Black balance	•MODE switch → CAM •Lens capped	●●●	CHECK ON ON BLACK	PR ◎TP201	PA ⏀VR201, G BLACK BAL	Center of video noise is in the blanking period.	2.8-2 (p. 2-11)
			●●● ⋮ ●		VIDEO OUT	PA ⏀VR101, B BLACK BAL ⏀VR301, R BLACK BAL	Minimum carrier leak. Change in GAIN SW setting does not affect carrier leak.	
	•Master black		●●●		PR ◎TP202	PA ⏀VR2, MASTER BLACK	Center of black carrier accords with blanking level.	2.8-3 (p. 2-12)
	•Offset voltage (Auto black)		●		Viewfinder display	CP ⏀VR5, AD OFFSET	Viewfinder display indicates "0".	2.8-4 (p. 2-12)
VIDEO PROCESS	•Standard iris setting	•MODE switch → CAM •IRIS → MANU •Gray scale chart •W. BAL → PRESET •Iris setting: →	●		PA ◎TP201	Lens iris	1.1 Vp-p (white peak)	2.9-1 (p. 2-13)
	•Input gain			CHECK ON OFF BLACK	PR ◎TP101 ◎TP201 ◎TP301	PA ⏀VR102, B IN GAIN ⏀VR202, G IN GAIN ⏀VR302, R IN GAIN	1.2 Vp-p (white peak)	2.9-2 (p. 2-13)
	•Video level G				PR ◎TP202 CC ◎TP2	PR2 ⏀VR1, 1H LEVEL	Levels of the two test points are the same.	2.10-2 (p. 2-14)
					SE ◎TP2	PR ⏀VR204, G OUT GAIN ⏀VR202, G GAMMA	1.2 Vp-p (white peak) 0.69 V [NTSC] (cross point) 0.67 V [PAL] (cross point)	
	B/R				VIDEO OUT	PR ⏀VR104, B OUT GAIN ⏀VR304, R OUT GAIN	Minimum carrier leak at white peak (0.714 Vp-p [NTSC] 0.7 Vp-p [PAL])	2.10-3 (p. 2-15)
						PR ⏀VR102, B GAMMA ⏀VR302, R GAMMA	Minimum carrier leak at cross point (0.41 Vp-p [NTSC] 0.39 Vp-p [PAL])	
	•Flare					PR ⏀VR301, R FLARE	Volume setting at the graduations' 2nd clockwise position from the full counterclockwise position.	2.10-4 (p. 2-15)
						⏀VR101, B FLARE ⏀VR201, G FLARE	Minimum carrier leak at dark portion.	
	•Knee point					PA ⏀VR1, KNEE	0.714 V (knee point) [NTSC] 0.7 V (knee point) [PAL]	2.11-1 (p. 2-16)
	•White clip		●●●			SE ⏀VR6, W CLIP	0.785 V (white clip) [NTSC] 0.77 V (white clip) [PAL]	2.11-2 (p. 2-16)
	•Auto white		●		Viewfinder display	CP ⏀VR1, B WHT ⏀VR2, R WHT	Viewfinder display indicates "0".	2.13 (p. 2-18)
CONTOUR CORRECTOR	•V. balance			CHECK OFF ON BLACK	CC ◎TP4 (Observe at V-rate)	CC ⏀VR4, V BAL	Minimum video component	2.14-2 (p. 2-19)
	•Noise slice				VIDEO OUT	Lens iris	0.57 V (white peak)	2.14-3 (p. 2-19)
						CC ⏀VR7, NOISE SLICE	Set noise level to 3/4 of that with NOISE SLICE set open	
	•V. contour					CC ⏀VR5, V LEVEL	0.13V (V. contour level) [NTSC] 0.11V (V. contour level) [PAL]	2.14-4 (p. 2-20)
	•H. contour					CC ⏀VR6, H LEVEL	0.13V (H. contour level)[NTSC] 0.11V (H. contour level) [PAL]	2.14-5 (p. 2-20)



Note: Arrangement of adjustment parts and measuring points are illustrated on the last page of this section. It is suggested to fold out the page for referring to parts location as shown in the figure.

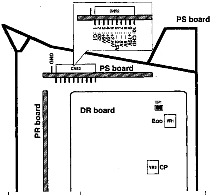


No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (①) Adjustment level (☆)	Adjustment procedure

2.6 CHECKING OF POWER SUPPLY (PS) VOLTAGES

Note: • Before connecting a digital voltmeter's probe to an adjustment part for checking, make sure to turn off the power switch every time in order to avoid shortcircuit between terminals.

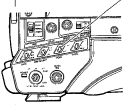
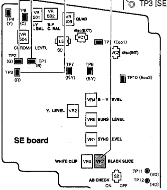
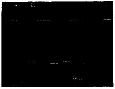
1	Check of supply voltages	• Digital voltmeter		1) Confirm that each voltage meets the specified value since there is no part provided for adjustment. If not, first check whether the power supply to this set satisfies the requirements in the voltage and capacitance, or not.
	+9 V		◎ CN52 pin 3 [PS] ☆ +9 V ± 0.4 V	
	+2.5 V		◎ CN52 pin 5 [PS] ☆ +2.5 V ± 0.5 V	
	−2.5 V		◎ CN52 pin 6 [PS] ☆ −2.5 V ± 0.5 V	
	−5 V		◎ CN52 pin 7 [PS] ☆ −5 V ± 0.25 V	
	−9 V		◎ CN52 pin 8 [PS] ☆ −9 V (−9 V to − 10 V)	
	+19 V		◎ CN52 pin 9 [PS] ☆ +19 V ± 0.5 V	

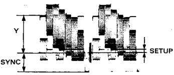
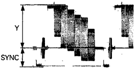
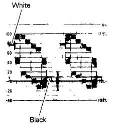
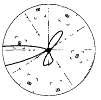

CN52
1 : G1
2 : G2
3 : +9V
4 : +9V
5 : +2.5V
6 : – 2.5V
7 : – 5V
8 : – 9V
9 : +19V
10 : CHD
PS board
GND
CN52
PS board
PR board
DR board
TP1
Eoo
VR1
VR3
CP

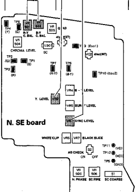
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

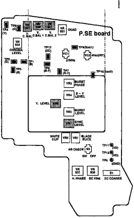
2.7 ADJUSTMENT OF ENCODER

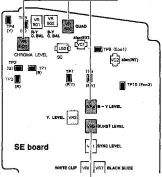
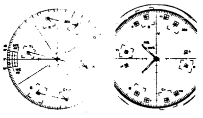
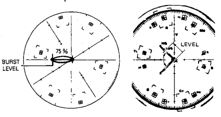
Note: • When proceeding to adjust the following items without a vectorscope, perform the items from No. 2 "Black slice level adjustment" to the item No. 4 "Carrier balance adjustment" only.

1	Preparation			1) Set the MODE switch to "BARS" to output color bars signal. 2) Connect an oscilloscope to the VIDEO OUTPUT terminal with a 75 Ω terminator.
2	Black slice level adjustment	• Oscilloscope (H-rate, 10 : 1) or Waveform monitor • Color bars output  TP4 (Y) TP8 (C) VR 501 VR 502 B-Y C. BAL VR 503 QUAD VR 504 CHROMA LEVEL LS1 SC 4fsc(EXT) VC1 TP (Eoo1) VC2 4fsc(INT) TP2 (G) TP1 (B) TP3 (R) TP7 (R-Y) TP6 (B-Y) TP10 (Eoo2) VR4 B – Y LEVEL Y. LEVEL VR2 VR5 BURST LEVEL VR1 SYNC LEVEL WHITE CLIP VR6 VR7 BLACK SLICE TP11 (VD) TP12 (HD) S2 AB CHECK ON OFF **SE board**	• G-channel ◎ TP2 [SE] ⏀ BLACK SLICE (VR7) [SE] ☆ Equalize blanking and pedestal levels.  NO GOOD • B-channel ◎ TP1 [SE] • R-channel ◎ TP3 [SE]	1) Remove difference between video pedestal level and blanking level. GOOD 2) Check that there is no difference between blanking and pedestal levels both on B and R channels. If there is, adjust VR7 to minimize the level difference on respective channels.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
3	Bars level adjustment	• Oscilloscope (H-rate, 10 : 1) or Waveform monitor • Color bars output	VIDEO OUT connector (with 75 Ω terminator) • Y ⦶ Y LEVEL (VR2) [SE] ☆ NTSC 100IRE (0.714 Vp-p) PAL 100% (0.7 Vp-p) • SYNC ⦶ SYNC LEVEL (VR1) [SE] ☆ NTSC 40IRE (0.286 Vp-p) PAL 0.3 Vp-p • SETUP (Check only) ☆ 7.5 IRE (53 mVp-p) [NTSC only]	1) Adjust respective bar levels as specified. — NTSC —  — PAL — 
4	Carrier balance adjustment		◎ VIDEO OUT connector (with 75 Ω terminator) ⦶ NTSC R-Y C.BAL (VR501) [SE] B-Y C.BAL (VR502) [SE] PAL U C.BAL (VR501) [SE] V C.BAL1 (VR502) [SE] V C.BAL2 (VR503) [SE] ☆ Minimum carrier leak	1) Alternately turn the VRs to minimize carrier leak in white and black portions.  **● When vectorscope is used:** 1) Set vectorscope's GAIN control to MAX. position. 2) Turn C. BAL VRs alternately to position the spots in the center. 


TP4 (Y)
TP8 (C)
VR 501
VR 502
R-Y C. BAL
B-Y C. BAL
VR 503
QUAD
VR 504
CHROMA LEVEL
L501
SC
4fsc (EXT)
TP9 (Esc1)
VC2
4fsc(INT)
TP2 (G)
TP1 (B)
TP3 (R)
TP7 (R-Y)
TP6 (B-Y)
TP10 (Esc2)
VR4
B-Y LEVEL
Y. LEVEL
VR2
VR5
BURST LEVEL
VR1
SYNC LEVEL
N. SE board
WHITE CLIP
VR6
VR7
BLACK SLICE
AB CHECK
S2
ON OFF
TP11 (VD)
TP12 (HD)
TP5 (GND)
VR 505
VR 506
S1
H. PHASE
SC FINE
SC COARSE

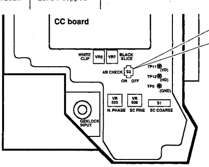

TP4 (Y)
TP8 (C)
U. C. BAL
V. C.BAL 1
V. C.BAL 2
VR 503
QUAD
P.SE board
VR 504
CHROMA LEVEL
TP13 (SC)
TP9(Esc1)
VC1
27MHz
VC2
4fsc(INT)
TP2 (G)
TP1 (B)
TP3 (R)
TP6 (B-Y)
TP7 (R-Y)
TP10(Esc2)
VR3
BURST PHASE
VR4
B-Y LEVEL
Y. LEVEL
VR2
VR5
BURST LEVEL
VR1
SYNC LEVEL
WHITE CLIP
VR6
VR7
BLACK SLICE
AB CHECK
S2
ON OFF
TP11 (VD)
TP12 (HD)
TP5 (GND)
VR 505
VR 506
S1
H. PHASE
SC FINE
SC COARSE

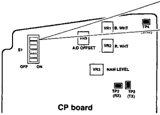
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure
5	Chroma signal adjustment	• Vectorscope • Color bars output	◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ B-Y LEVEL (VR4) [SE] ⏀ QUAD (VR503) [SE] ⏀ CHROMA LEVEL (VR504) [SE]  TP4 (Y) VR 501 VR 502 R-Y C.BAL B-Y C.BAL QUAD 4fsc(EXT) VC1 L501 SC CHROMA LEVEL TP9 (Eoo1) VC2 4fsc(INT) TP2 (G) TP1 (B) TP3 (R) TP7 (R-Y) TP10 (Eoc2) B-Y LEVEL Y. LEVEL VR2 BURST LEVEL SYNC LEVEL WHITE CLIP VR7 BLACK SLICE SE board	1) Set a vectorscope's GAIN control to the "CAL" or 75% position (preset position). 2) Alternately turn the VRs to position all spots (R, G, B, Mg, Cy, Yl) in the specified points respectively.  NTSC PAL
6	Burst level adjustment		◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ BURST LEVEL (VR5) [SE]	1) Adjust the level as specified.  75 % BURST LEVEL LEVEL NTSC PAL
7	Burst phase adjustment (PAL only)		⏀ BURST PHASE (VR3) [SE]	1) Adjust the burst phase as illustrated above.

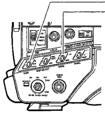
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (①) Adjustment level (☆)	Adjustment procedure

2.8 ADJUSTMENT OF BLACK BALANCE

1 Preparation •Lens : Capped

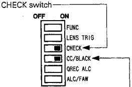

CC board
WHITE CLIP
VR6
VR7
BLACK SLICE
AB CHECK S2
ON OFF
TP11 (VD)
TP12 (HD)
TP5 (GND)
VR 505
VR 506
S1
H. PHASE
SC FINE
SC COARSE
GENLOCK INPUT


VR1 B. WHT
TP4
VR5
A/D OFFSET
VR2 R. WHT
S1
OFF ON
VR3 NAM LEVEL
TP2 (RX)
TP3 (TX)
CP board



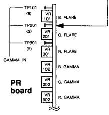
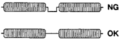
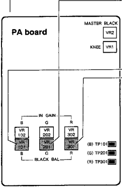
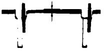
1) Turn on the AB CHECK switch on the SE board.

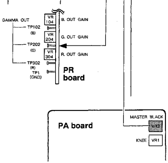
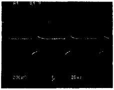
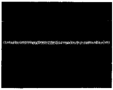
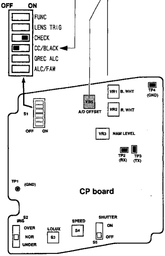
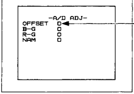
2) Set the CHECK switch on the CP board to "ON" for check mode.


CHECK switch
OFF ON
FUNC
LENS TRIG
CHECK
CC/BLACK
QREC ALC
ALC/FAW

3) BLACK ADJUST ON/OFF switch:
Set to ON to enter the black adjustment mode.
OFF: Normal mode
Black slice is activated.
ON : Adjustment mode
Black slice is inactivated.

4) Set up the camera as follows.
- Lens : Close with lens cap.
(When lens cap is unavailable, set the iris to "C" [close].)
- GAIN switch: set to "•••" (+18 dB).
- MODE switch: Set to "CAM" position.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure
2	Black balance adjustment	• Lens: Capped • Black adjusting mode • Oscilloscope (H-rate, 10 : 1)	◎ TP201 [PR] ⏀ G. BLACK BAL (VR201) [PA] ☆ Centers of blanking and noise levels accord with each other.  TP101 (B) VR 101 B. FLARE TP201 (G) VR 201 G. FLARE TP301 (R) VR 301 R. FLARE GAMMA IN VR 102 B. GAMMA VR 202 G. GAMMA VR 302 R. GAMMA PR board	1) Accord the center of video noise with the blanking period.  (H-rate)
		 PA board MASTER BLACK VR2 KNEE VR1 IN GAIN B G R VR 102 VR 202 VR 302 VR 101 VR 201 VR 301 B G R BLACK BAL (B) TP101 (G) TP201 (R) TP301	◎ VIDEO OUT connector ⏀ B. BLACK BAL (VR101) [PA] ⏀ R. BLACK BAL (VR301) [PA] ☆ Minimum carrier leak	2) Minimize carrier leak. Minimum carrier leak  3) Repeat changing the GAIN switch setting between "•" (0 dB) and "•••" (+18 dB) while confirming nothing of change in carrier leak volume. When carrier leak changes in the volume, repeat the above steps 1) and 2).

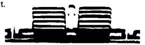
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
3	Master black adjustment	• Lens: Capped • Black adjusting mode	◎ TP202 [PR] ⓣ MASTER BLACK (VR2) [PA] ☆ Center of black carrier accords with blanking.  GAMMA OUT TP102 (B) TP202 (G) TP302 (R) TP1 (GND) VR 104 B. OUT GAIN VR 204 G. OUT GAIN VR 304 R. OUT GAIN PR board PA board MASTER BLACK VR2 KNEE VR1	1) Accord the center of video noise with the blanking period.  NG  OK 2) Return the GAIN switch to "•" position.
4	Offset voltage adjustment	• Viewfinder • Black adjusting switch to "OFF"  OFF ON FUNC LENS TRIG CHECK CC/BLACK QREC ALC ALC/FAW S1 OFF ON VR5 A/D OFFSET VR1 B. WHT VR2 R. WHT TP4 (GND) VR3 NAM LEVEL TP2 (RX) TP3 (TX) TP1 (GND) CP board S2 IRIS OVER NOR UNDER LOLUX S3 SPEED S4 SHUTTER ON OFF S5	◎ Viewfinder display ⓣ AD OFFSET (VR5) [CP] ☆ Displayed value: "0"	1) Adjust the displayed value to be "0". Viewfinder display  -A/D ADJ- OFFSET 0 B-G 0 R-G 0 NAM 0 **Information** •About OFFSET voltage adjustment Changing in the wording, "offset voltage adjustment" is put into "error adjustment of CPU's A-D converter". In detail, AUTO WHITE and AUTO BLACK adjustments are performed by the CPU, which compares and calcuates digital values of B, G and R channel video signals that are output from the video process circuit and converted to digital data by the A-D converter. The purpose of this adjustment is to compensate erors made by this A-D convertor.

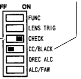
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

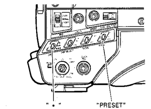
2.9 ADJUSTMENT OF INPUT GAIN (Setting of input signal level)

Note:
- After completing this input gain adjustment, do not disturb the lens iris until the R/B gain setting is finished.
- Lighting should be set in the following conditions.
  1) When input signal level is 100 %, the lens iris should be set to F5.6 or smaller stop (the lens with extender shoule be set to X1).
  2) Illumination must be uniform on the camera subject.
  3) All of these adjustments should be performed in the check mode.
     - Set CHECK switch on CP board to "ON".
     - Set BLACK ADJUST switch to "OFF".

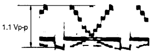
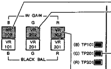
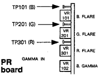
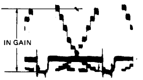
Connect oscilloscope to TP101 (B-ch) of PA board, and adjust illumination so that video signal waveform observed at V-rate is flat.







  4) Set the IRIS MODE switch of the lens to "M" for manual mode.

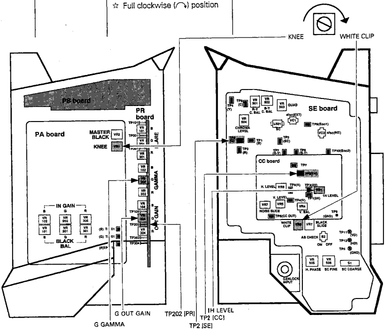
1	Iris setting	• Oscilloscope (H-rate, 10 : 1) • Gray scale chart	◎ TP201 [PA] ⏀ Lens iris ☆ 1.1 Vp-p	1) Confirm that every switch of the camera is set to the standard position (see page 2-3). Particularly confirm that the W. BAL switch is set to "PRESET" and the GAIN switch to " • ". 2) Shoot a gray scale chart while adjusting the lens iris to obtain the specified level. 
2	Input gain adjustment  IN GAIN B G R VR 102 VR 202 VR 302 VR 101 VR 201 VR 301 B G R BLACK BAL (B) TP101 (G) TP201 (R) TP301 **PA board**  TP101 (B) TP201 (G) TP301 (R) VR 101 B. FLARE VR 201 G. FLARE VR 301 R. FLARE GAMMA IN VR 102 B. GAMMA **PR board**		• B channel ◎ TP101 [PR] ⏀ B IN GAIN (VR102) [PA] ☆ 1.2 Vp-p • G channel ◎ TP201 [PR] ⏀ G IN GAIN (VR202) [PA] ☆ 1.2 Vp-p • R channel ◎ TP301 [PR] ⏀ R IN GAIN (VR302) [PA] ☆ 1.2 Vp-p	1) Confirm that input gain meets the specified level on respective channels. If there is something incorrect, adjust it. 

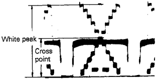
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

2.10 ADJUSTMENT OF VIDEO LEVEL

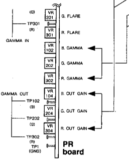
Note: • This adjustment must follow "2.9 ADJUSTMENT OF INPUT GAIN".
Make sure to proceed to this adjustment after completing the input gain adjustment.

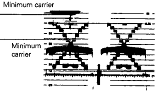
1	Preparation		⦶ KNEE (VR1) [PA] ⦶ WHITE CLIP (VR6) [SE] ☆ Full clockwise (↷) position	1) Turn the specified VRs fully clockwise (↷) to release knee and white clip.


KNEE
WHITE CLIP
PS board
PR board
PA board
MASTER BLACK
VR2
KNEE
VR1
TP101
VR 101
B
TP201
VR 201
G
TP301
VR 301
R
FLARE
VR 102
B
VR 202
G
VR 302
R
GAMMA
VR 104
B
TP102
VR 204
G
TP202
VR 304
R
TP302
TP304
OUT GAIN
IN GAIN
B
G
R
VR 102
VR 202
VR 302
VR 101
VR 201
VR 301
B
G
R
BLACK BAL
(B) TP
(G) TP
(R) TP
SE board
TP4 (Y)
TP5 (C)
VR 501
R-Y C. BAL
VR 502
B-Y C. BAL
VR 503
QUAD
4fsc(EXT)
VC1
VR 504
CHROMA LEVEL
L501
SC
TP9(Eoo1)
VC2
4fsc(INT)
TP1 (B)
TP3 (SC)
TP3 (R)
TP7 (R-Y)
TP8 (B-Y)
TP10(Eoo2)
CC board
TP7
TP2(H)
H. LEVEL
VR6
TP3(H)
TP1(2H)
VR1
1H LEVEL
TP1(0H)
V. LEVEL
TP4(V)
VR7
VR5
VR4
NOISE SLICE
V. BAL
TP6(CC OUT)
TP8 (GND)
WHITE CLIP
VR6
VR7
BLACK SLICE
AB CHECK
S2
ON OFF
TP11 (VD)
TP12 (HD)
TP5 (GND)
VR 505
H. PHASE
VR 506
SC FINE
S1
SC COARSE
GENLOCK INPUT
G OUT GAIN
G GAMMA
TP202 [PR]
1H LEVEL
TP2 [CC]
TP2 [SE]

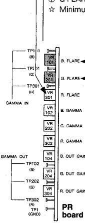
2	G channel Gain & Gamma adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	◎ TP202 [PR] ◎ TP2 [CC] ⦶ 1H LEVEL (VR1) [CC] ☆ Same level at two test points	1) Adjust the VR to obtain the same white peak level of the gray scale chart at the two test points.
			◎ TP2 [SE] • White peak ⦶ G OUT GAIN (VR204) [PR] ☆ 1.2 Vp-p • Cross point ⦶ G GAMMA (VR202) [PR] ☆ NTSC 0.69 Vp-p PAL 0.67 Vp-p	2) Adjust levels to be the specified values.  White peak Cross point

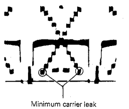
<table>
<tr><th>No.</th><th>Item</th><th>Measuring instruments & Input signals</th><th>Measuring point (◎)
Adjustment parts (⏀)
Adjustment level (☆)</th><th>Adjustment procedure</th></tr>
<tr><td>3</td><td>R/B channel Gain & Gamma adjustment</td><td>• Gray scale chart
↓
Just scan
• Oscilloscope (H-rate, 10 : 1)


(G)
VR 201
G. FLARE
TP301
(R)
VR 301
R. FLARE
GAMMA IN
VR 102
B. GAMMA
VR 202
G. GAMMA
VR 302
R. GAMMA
GAMMA OUT
VR 104
B. OUT GAIN
TP102
(B)
VR 204
G. OUT GAIN
TP202
(G)
VR 304
R. OUT GAIN
TP302
(R)
TP1
(GND)
PR
board
</td><td>◎ VIDEO OUT connector (with 75 Ω terminator)
⏀ B OUT GAIN (VR104) [PR]
⏀ R OUT GAIN (VR304) [PR]
⏀ B GAMMA (VR102) [PR]
⏀ R GAMMA (VR302) [PR]</td><td>3) Adjust VRs for minimum video white level as well as for minimum carrier at cross point.


Minimum carrier
Minimum carrier
</td></tr>
<tr><td></td><td></td><td></td><td>◎ VIDEO OUT connector
☆
<table>
<tr><th colspan="2">NTSC</th></tr>
<tr><td>White peak level</td><td>0.714 Vp-p</td></tr>
<tr><td>Cross point</td><td>0.41 Vp-p</td></tr>
</table>
<table>
<tr><th colspan="2">PAL</th></tr>
<tr><td>White peak level</td><td>0.7 Vp-p</td></tr>
<tr><td>Cross point</td><td>0.39 Vp-p</td></tr>
</table>
</td><td>4) Confirm that levels of white peak and cross point are as respectively specified.
When either of them is different, repeat the previous steps from 2).</td></tr>
<tr><td>4</td><td>Flare level adjustment</td><td>• Gray scale chart
↓
Just scan
• Oscilloscope (H-rate, 10 : 1)</td><td>⏀ R FLARE (VR301) [PR]
☆ Graduations' 2nd clockwise position from the full counter-clockwise position</td><td>1) Set the R FLARE VR to the position shown in the figure below.

</td></tr>
<tr><td></td><td></td><td></td><td>◎ VIDEO OUT connector (with 75 Ω terminator)
⏀ B FLARE (VR101) [PR]
⏀ G FLARE (VR201) [PR]
☆ Minimum carrier leak


TP101
(B)
VR 101
B. FLARE
TP201
(G)
VR 201
G. FLARE
TP301
(R)
VR 301
R. FLARE
GAMMA IN
VR 102
B. GAMMA
VR 202
G. GAMMA
VR 302
R. GAMMA
GAMMA OUT
VR 104
B. OUT GAIN
TP102
(B)
VR 204
G. OUT GAIN
TP202
(G)
VR 304
R. OUT GAIN
TP302
(R)
TP1
(GND)
PR
board
</td><td>2) Minimize carrier leak with the B FLARE and G FLARE VRs.

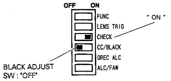

Minimum carrier leak

3) Quickly change the iris setting position between OPEN and CLOSE while confirming that no coloring is observed in the picture.
If there is coloring observed at that time, fine adjust the B FLARE and G FLARE VRs.</td></tr>
</table>

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure

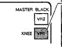
2.11 ADJUSTMENT OF KNEE SLOPE AND WHITE CLIP

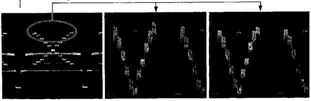
Note:
- Make sure to proceed to this section after completing "2.10 Adjustment of Video Level".
- Set the CHECK MODE switch on the CP board to "ON" to activate the check mode.


OFF
ON
FUNC
LENS TRIG
CHECK
CC/BLACK
QREC ALC
ALC/FAW
" ON "
BLACK ADJUST
SW : "OFF"

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
1	Preparation adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1) or Waveform monitor	◎ VIDEO OUT connector (with 75 Ω terminator) ⦶ Lens iris ☆ NTSC 100 IRE (0.714 Vp-p) PAL 0.7 Vp-p	1) Set video level as specified.
			⦶ KNEE (VR1) [PA] ☆ Knee point : NTSC 100 IRE (0.714 Vp-p) PAL 0.7 Vp-p	2) Turn the VR fully clockwise once, then slowly return it counterclockwise up to a point just before white peak is clipped.

PA board

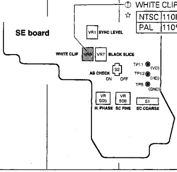

MASTER BLACK
VR2
KNEE
VR1

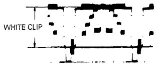


GOOD NO GOOD

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⦶) Adjustment level (☆)	Adjustment procedure
2	White clip adjustment		◎ VIDEO OUT connector (with 75 Ω terminator) ⦶ WHITE CLIP (VR6) [SE] ☆ NTSC 110IRE (0.785 Vp-p) PAL 110% (0.77 Vp-p)	1) Set the GAIN switch to "•••" (+18 dB) position. 2) Adjust clip level as specified.

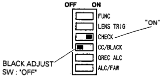
SE board


VR1 SYNC LEVEL
WHITE CLIP
VR6
VR7 BLACK SLICE
AB CHECK
S2
ON
OFF
TP11 (VD)
TP12 (HD)
TP5 (GND)
VR 505
VR 506
S1
H. PHASE
SC FINE
SC COARSE



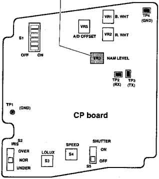
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

2.12 ADJUSTMENT OF IRIS

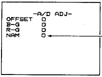

OFF
ON
FUNC
LENS TRIG
CHECK
CC/BLACK
QREC ALC
ALC/FAW
"ON"
BLACK ADJUST
SW : "OFF"

Note:
- For proceeding to this section, it is the first condition that procedures of the sections 2.9 through 2.11 have been completed.
- Set the camera to the check mode for adjustment.
- Set the lens iris to "M" for manual operation.
- Set the GAIN switch to "•" (0 dB) position.

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
1	Preparation	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	◎ VIDEO OUT connector (with 75 Ω terminator) ⓣ Lens iris ☆ NTSC: 100 IRE (0.714 Vp-p) PAL: 0.7 Vp-p	1) Adjust the lens iris to obtain the specified value.
2	NAM value adjustment		◎ Viewfinder display ⓣ NAM LEVEL (VR3) [CP] ☆ Set to "0".	NAM (No Additive Mix) signal is used as the reference signal to control the lens iris by the CPU. 2) Adjust the VR to set the value displayed in the viewfinder to "0".


S1
OFF
ON
VR5
A/D OFFSET
VR1
B. WHT
VR2
R. WHT
TP4
(GND)
VR3
NAM LEVEL
TP2
(RX)
TP3
(TX)
TP1
(GND)
S2
IRIS
OVER
NOR
UNDER
LOLUX
S3
SPEED
S4
SHUTTER
ON
OFF
S5

CP board

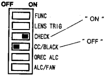


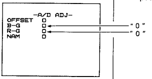
```
    -A/D ADJ-
OFFSET   0
B-G      0
R-G      0
NAM      0
```

No.	Item	Measuring instruments & input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure

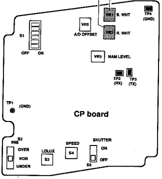
2.13 ADJUSTMENT OF AUTO WHITE

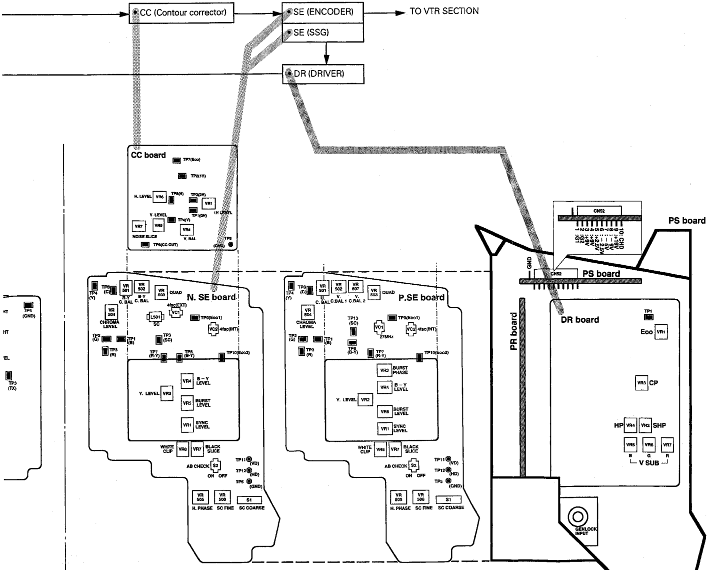
Note:
- For proceeding to this section, it is the first condition that video level has been correctly adjusted by the procedures of the sections 2.9 through 2.11.
- The item No. 4 "Offset voltage adjustment" of the section 2.8 has been completed before proceeding to this section.
- Set the camera to the check mode for this adjustment. In the check mode, signal levels (B-G and R-G) detected on R, G and B channels are displayed in the viewfinder. With correct adjustment of the auto white and the auto black functions, the CPU operates to match detected B and R channel levels with the G channel level. Therefore, detection levels of respective channels must accord with each other in the condition that the white balance and the black balance of the camera are correctly adjusted. The purpose of this section is to accord the detecting levels of B and R channels with G channel's.


OFF
ON
FUNC
LENS TRIG
CHECK
CC/BLACK
QREC ALC
ALC/FAW
" ON "
" OFF "

1	Preparation	• Gray scale chart ↓ Just scan • Oscilloscope	◎ VIDEO OUT connector (with 75 Ω terminator) Ⓣ Lens iris ☆ NTSC 100 IRE (0.714 Vp-p) PAL 0.7 Vp-p	1) Adjust video level as specified.
2	Auto white adjustment		◎ Viewfinder display  Ⓣ B WHT (VR1) [CP] Ⓣ R WHT (VR2) [CP] ☆ Display values : "0"	2) Adjust VRs to set the displayed value to "0" respectively.

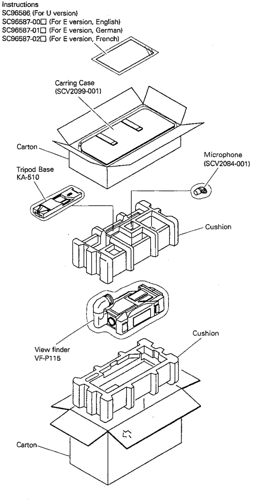
-A/D ADJ-
OFFSET 0
B-G 0
R-G 0
NAM 0
" 0 "
" 0 "


S1
OFF
ON
VR5
A/D OFFSET
VR1
B. WHT
VR2
R. WHT
TP4
(GND)
VR3
NAM LEVEL
TP2
(RX)
TP3
(TX)
TP1
(GND)
CP board
S2
IRIS
OVER
NOR
UNDER
LOLUX
S3
SPEED
S4
SHUTTER
ON
OFF
S5


CC (Contour corrector)
SE (ENCODER)
TO VTR SECTION
SE (SSG)
DR (DRIVER)
CC board
TP7(Eoo)
TP2(1H)
H. LEVEL
VR6
TP5(H)
TP3(2H)
VR1
1H LEVEL
TP1(0H)
V. LEVEL
TP4(V)
VR7
VR5
VR4
NOISE SLICE
V. BAL
TP8
(GND)
TP6(CC OUT)
TP4
(GND)
TP3
(TX)
N. SE board
TP4
(Y)
TP8
(C)
VR 501
R-Y C. BAL
VR 502
B-Y C. BAL
VR 503
QUAD
VR 504
CHROMA LEVEL
4fsc(EXT)
VC1
L501
SC
TP9(Eoo1)
VC2
4fsc(INT)
TP2
(G)
TP1
(B)
TP3
(SC)
TP3
(R)
TP7
(R-Y)
TP6
(B-Y)
TP10(Eoo2)
VR4
B – Y LEVEL
Y. LEVEL
VR2
VR5
BURST LEVEL
VR1
SYNC LEVEL
WHITE CLIP
VR6
VR7
BLACK SLICE
AB CHECK
S2
ON OFF
TP11
(VD)
TP12
(HD)
TP5
(GND)
VR 505
H. PHASE
VR 506
SC FINE
S1
SC COARSE
P.SE board
TP4
(Y)
TP8
(C)
VR 501
U. C. BAL
VR 502
V. C.BAL 1
VR 507
V. C.BAL 2
VR 503
QUAD
VR 504
CHROMA LEVEL
TP13
(SC)
VC1
27MHz
TP9(Eoo1)
VC2
4fsc(INT)
TP2
(G)
TP1
(B)
TP3
(R)
TP6
(B-Y)
TP7
(R-Y)
TP10(Eoo2)
VR3
BURST PHASE
VR4
B – Y LEVEL
Y. LEVEL
VR2
VR5
BURST LEVEL
VR1
SYNC LEVEL
WHITE CLIP
VR6
VR7
BLACK SLICE
AB CHECK
S2
ON OFF
TP11
(VD)
TP12
(HD)
TP5
(GND)
VR 505
H. PHASE
VR 506
SC FINE
S1
SC COARSE
CN52
1 :G1
2 :G2
3 :+9V
4 :+9V
5 :+2.5V
6 :– 2.5V
7 :– 5V
8 :– 9V
9 :+19V
10: CHD
PS board
GND
CN52
PS board
PR board
DR board
TP1
Eoo
VR1
VR3
CP
HP
VR4
VR2
SHP
VR5
VR6
VR7
B
G
R
V SUB
GENLOCK INPUT

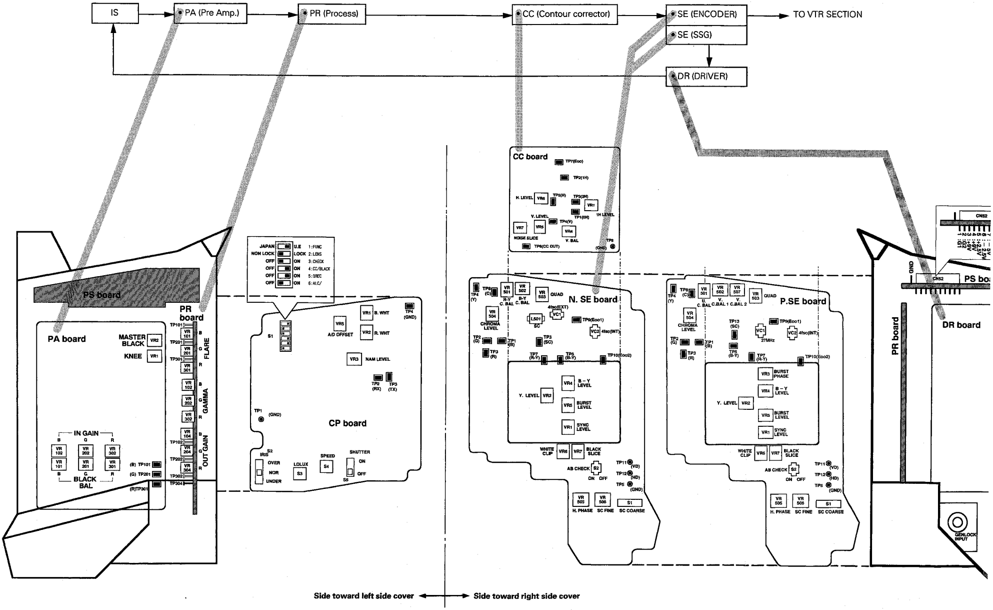
de cover ←——→ **Side toward right side cover**

SECTION 3
REPACKING

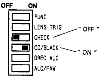

Instructions
SC96586 (For U version)
SC96587-00☐ (For E version, English)
SC96587-01☐ (For E version, German)
SC96587-02☐ (For E version, French)
Carring Case
(SCV2099-001)
Carton
Microphone
(SCV2084-001)
Tripod Base
KA-510
Cushion
Cushion
View finder
VF-P115
Carton

Note: Accessories above are subject to change without notice according to sales versions.

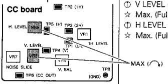
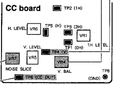
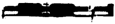
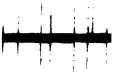
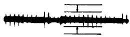
2.18 LOCATION OF ADJUSTMENT PARTS

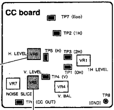
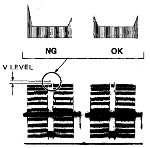
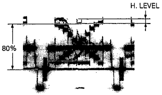

IS
PA (Pre Amp.)
PR (Process)
CC (Contour corrector)
SE (ENCODER)
SE (SSG)
DR (DRIVER)
TO VTR SECTION
PS board
PA board
MASTER BLACK
VR2
KNEE
VR1
IN GAIN
B
G
R
VR 102
VR 202
VR 302
VR 101
VR 201
VR 301
BLACK BAL
(B) TP101
(G) TP201
(R)TP301
PR board
TP101
VR 101
TP201
VR 201
TP301
VR 301
FLARE
VR 102
VR 202
VR 302
GAMMA
VR 104
TP102
VR 204
TP202
VR 304
TP302
TP304
OUT GAIN
JAPAN
U.E
1:FUNC
NON LOCK
LOCK
2:LENS
OFF
ON
3:CHECK
4:CC/BLACK
5:QREC
6:ALC/
S1
VR5
A/D OFFSET
VR1
B. WHT
VR2
R. WHT
TP4
(GND)
VR3
NAM LEVEL
TP2
(RX)
TP3
(TX)
TP1
(GND)
CP board
S2
IRIS
OVER
NOR
UNDER
LOLUX
S3
SPEED
S4
SHUTTER
ON
OFF
S5
CC board
TP7(Eoo)
TP2(1H)
H. LEVEL
VR6
TP5(H)
TP3(2H)
VR1
TP1(0H)
1H LEVEL
V. LEVEL
TP4(V)
VR7
VR5
VR4
NOISE SLICE
V. BAL
TP6(CC OUT)
TP8
(GND)
N. SE board
TP4
(Y)
TP8
(C)
VR 501
R-Y C. BAL
VR 502
B-Y C. BAL
VR 503
QUAD
VR 504
CHROMA LEVEL
L501
SC
4fsc(EXT)
VC1
TP9(Eoo1)
VC2
4fsc(INT)
TP2
(G)
TP1
(B)
TP3
(SC)
TP3
(R)
TP7
(R-Y)
TP6
(B-Y)
TP10(Eoo2)
VR4
B – Y LEVEL
Y. LEVEL
VR2
VR5
BURST LEVEL
VR1
SYNC LEVEL
WHITE CLIP
VR6
VR7
BLACK SLICE
AB CHECK
S2
ON
OFF
TP11
(VD)
TP12
(HD)
TP5
(GND)
VR 505
H. PHASE
VR 506
SC FINE
S1
SC COARSE
P.SE board
TP4
(Y)
TP8
(C)
VR 501
U. C. BAL
VR 502
V. C.BAL 1
VR 507
V. C.BAL 2
VR 503
QUAD
VR 504
CHROMA LEVEL
TP13
(SC)
VC1
27MHz
TP9(Eoo1)
VC2
4fsc(INT)
TP2
(G)
TP1
(B)
TP6
(B-Y)
TP7
(R-Y)
TP3
(R)
TP10(Eoo2)
VR3
BURST PHASE
VR4
B – Y LEVEL
Y. LEVEL
VR2
VR5
BURST LEVEL
VR1
SYNC LEVEL
WHITE CLIP
VR6
VR7
BLACK SLICE
AB CHECK
S2
ON
OFF
TP11
(VD)
TP12
(HD)
TP5
(GND)
VR 505
H. PHASE
VR 506
SC FINE
S1
SC COARSE
CN52
1 :G1
2 :G2
3 :+9V
4 :+9V
5 :+2.5V
6 : – 2.5V
7 : – 5V
GND
CN52
PS boa
PR board
DR board
GENLOCK INPUT
Side toward left side cover
Side toward right side cover

2.14 ADJUSTMENT OF CONTOUR CORRECTOR


OFF
ON
FUNC
LENS TRIG
CHECK
"OFF"
CC/BLACK
"ON"
OREC ALC
ALC/FAW

Note:
- For proceeding to this section, it is the first condition that video output level has been adjusted correctly by the procedures of the sections 2.9 through 2.11.
- Set the CHECK MODE switch on the CP board to "OFF" for adjustment in the normal mode.
- Set the CC switch and the CONTOUR switch to "ON" before proceeding to do the following adjustment.

1	Preparation	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1) or Waveform monitor	◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ Lens iris ☆ NTSC 100 IRE (0.714 Vp-p) PAL 0.7 Vp-p (white level of gray scale chart)	1) Confirm that all settings of the camera are in the normal state (see page 2-3). Particularly check the following switch settings. W. BAL switch : "PRESET" GAIN switch : " • " (0 dB) 2) Shoot the gray scale chart while adjusting the lens iris to obtain the specified level.
		 CC board TP2 (1H) H. LEVEL VR6 TP5 (H) TP3 (2H) VR1 1H LEVEL TP1 (0H) V. LEVEL TP4 (V) VR7 VR5 VR4 NOISE SLICE V. BAL TP8 TP6 (CC OUT) (GND) MAX (↷)	⏀ V LEVEL (VR5) [CC] ☆ Max. (Full clockwise position) ⏀ H LEVEL (VR6) [CC] ☆ Max. (Full clockwise position)	3) Set respective VRs to the maximum position. Note: This setting is not required for fine adjustment of contour level only. In this case, proceed to the item No. 4 "V. contour level adjustment".
2	V. zero balance adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (V-rate, 10 : 1)	◎ TP4 [CC] ⏀ V BAL (VR4) [CC] ☆ Minimum video component  CC board TP2 (1H) H. LEVEL VR6 TP5 (H) TP3 (2H) VR1 1H LEVEL TP1 (0H) V. LEVEL TP4 (V) VR7 VR5 VR4 NOISE SLICE V. BAL TP8 TP6 (CC OUT) (GND)	4) Observe the waveform with the oscilloscope at V-rate while minimizing video components. No good  Good 
3	Noise slice adjustment	• Oscilloscope (H-rate, 10 : 1) or Waveform monitor	◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ Lens iris ☆ 80% [NTSC : 0.57 Vp-p, PAL : 0.56 VP-P] (white level of gray scale chart)	5) Adjust the lens iris to obtain the specified level.
			◎ TP6 [CC] ⏀ NOISE SLICE (VR7) [CC] ☆ Noise level : 3/4	6) Turn the NOISE SLICE VR fully counter-clockwise (↶) while checking noise level. 7) Adjust the NOISE SLICE VR to reduce the noise level to three quarters (3/4). 

No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure
4	V. contour level adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (V-rate, 10 : 1)	◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ Lens iris ☆ NTSC 80 IRE (0.57 Vp-p) PAL 80% (0.56 Vp-p)  ◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ V LEVEL (VR5) [CC] ☆ NTSC 18 IRE (0.13 Vp-p) PAL 16% (0.11 Vp-p)	8) Slowly move the camera up and down and set it where the window section of the gray scale chart has the same contour level. 9) Set video level as specified.  10) Adjust the contour level as specified.
5	H. contour level adjustment	• In-megacycle chart (JVC part No.: RESC-010) ↓ Just scan	◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ H LEVEL (VR6) [CC] ☆ NTSC 18 IRE (0.13 Vp-p) PAL 16% (0.11 Vp-p)	11) Adjust the video signal level to be 80% as well as described in the preceding page. 12) Adjust the contour level as specified. 

CAUTION

If specified contour level cannot be obtained with this adjustment, it maybe results from maladjustment of the item 2.17-6.
In such a case, check and adjust the item again.

INFORMATION:

The values appearing in the above "Adjustment of Contour Corrector" are just standards. To emphasize contour much more, try to change the previously mentioned adjustment levels as follows.

☆ Noise level specified in "3. Noise slice adjustment" to "more than 3/4".

☆ H. contour level specified in "5. H. contour level adjustment" to "higher" than the appearing value.

However, those level changes should be tried carefully and moderately since either of those changes may result in increase of video noise or noise generation in VTR recording owing to over-modulation. When those level changes are intended, it is required to inform the user beforehand.

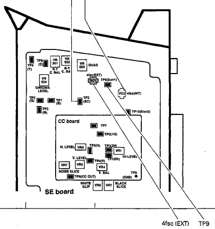
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

2.15 ADJUSTMENT OF SSG (Adjustment of internally synchronizing mode)

Note: • Warm up the camera for 15 minutes or more before adjustment.

- Frequency counter to be used must satisfy the following requirements.
  1) 8 digits or more readable.
  2) Stability higher than 0.1 ppm or 1 × 10^{-7} at 0° C to 40° C.

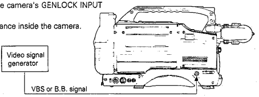
1	SC frequency adjustment	• Frequency counter	◎ TP13 [SE] ⓣ 4fsc, INT (VC2) [SE] ☆ NTSC 3.579545 MHz ± 10 Hz PAL 4.433619 MHz ± 10 Hz	1) Adjust the frequency as specified.


TP4 (Y)
TP8 (C)
VR 501
R-Y C. BAL
VR 502
B-Y C. BA
VR 503
QUAD
VR 504
CHROMA LEVEL
4fsc(EXT)
VC1
TP9(Eoo1)
VC2 4fsc(INT)
TP2 (G)
TP1 (B)
TP3 (SC)
TP3 (R)
TP10(Eoo2)
CC board
TP7
TP2(1H)
H. LEVEL
VR8
TP5(H)
TP3(2H)
VR1
1H LEVEL
V. LEVEL
TP4(V)
TP1(0H)
VR7
VR5
VR4
NOISE SLICE
V. BAL
TP8 (GND)
TP6(CC OUT)
WHITE CLIP
VR6
VR7
BLACK SLICE
SE board
4fsc (EXT)
TP9

2.16 ADJUSTMENT OF SSG (Adjustment of externally synchronizing mode)

Note: • Proceed to this section in succession to the previous adjustment of internally synchronizing mode.

- Supply VBS or B.B. (black burst) signal to the camera's GENLOCK INPUT terminal from a video signal generator.
  This input signal is terminated by 75 Ω resistance inside the camera.

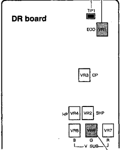
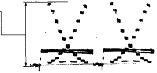
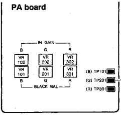

Video signal generator
VBS or B.B. signal

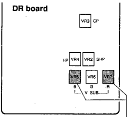
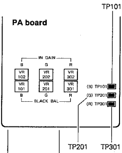
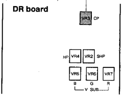
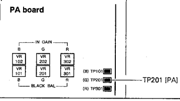
1	H. lock adjustment	• VBS or B.B. signal • Digital voltmeter	◎ TP9 [SE] ⓣ 4fsc, EXT (VC1) [SE] ☆ +5.0 V ± 0.5 V DC	1) Adjust the VC1 to obtain the specified voltage.

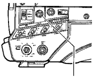
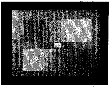
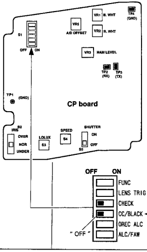
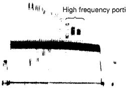
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure

2.17 ADJUSTMENT OF CCD DRIVER AND TIMING GENERATOR

Note:
- This adjustment is not required in general except when the optical block assembly is replaced.
- Accordingly, the following procedure is just a reference for the case the VRs concerned are erroneously disturbed.

1	Preparation			1) Confirm that all settings of the camera are in the normal conditions (see page 3-3).
2	Error voltage adjustment (Lock loop inside timing generator)	• Digitl voltmeter	◎ TP1 [DR] ⏀ EOO (VR1) [DR] ☆ +2.5 V DC  **DR board** TP1 EOO VR1 VR3 CP HP VR4 VR2 SHP VR5 VR6 VR7 B G R V SUB	1) Adjust the voltage as specified.
3	Vsub voltage adjustment (relating to blooming suppression voltage and dynamic range)	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	⏀ G V SUB (VR6) [DR] ☆ Full counterclockwise position (↶) ◎ TP201 [PA] ⏀ Lens iris ☆ 3.3 Vp-p • G channel ◎ TP201 [PA] ⏀ G V SUB (VR6) [DR] ☆ Just before clipping of white level	1) Turn the VR fully counterclockwise to eliminate bloom-ing suppression voltage. 2) Adjust the white peak of the gray scale chart to have the specified level.  3) Adjust the G. V SUB VR to the position just before the white level of the gray scale chart is clipped.
		 **PA board** IN GAIN B G R VR 102 VR 202 VR 302 VR 101 VR 201 VR 301 B G R BLACK BAL (B) TP101 (G) TP201 (R) TP301 TP201		

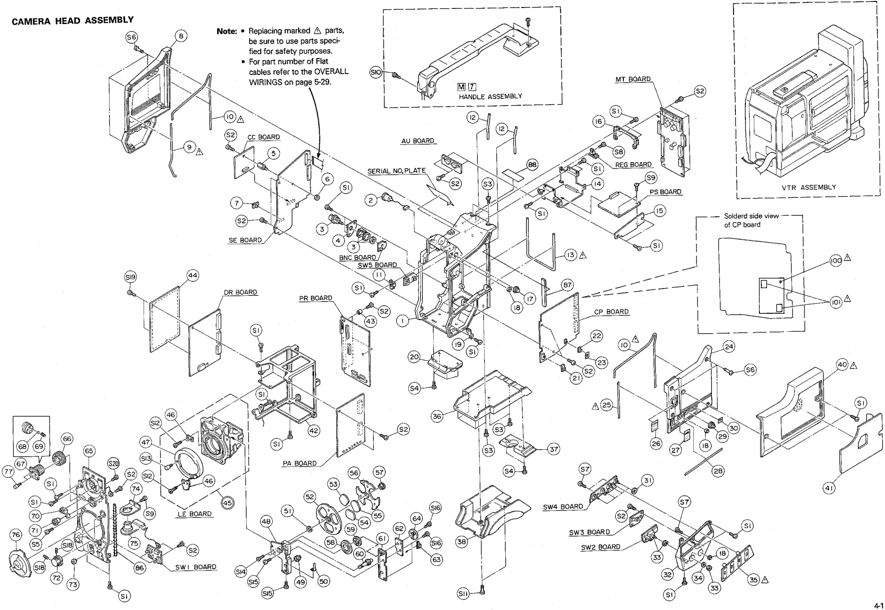
No.	Item	Measuring instruments & Input signals	Measuring point (◎) Adjustment parts (Ⓣ) Adjustment level (☆)	Adjustment procedure
3			• B channel ◎ TP201 [PA] Ⓣ Lens iris ☆ 1.1 Vp-p	4) Adjust the signal level on G-channel as specified.
	 **DR board** VR3 CP HP VR4 VR2 SHP VR5 VR6 VR7 B G R V SUB		◎ TP101 [PA]	5) Measure the signal level on B-channel after the above step 4).
			Ⓣ Lens iris ☆ Signal level four times as high as that measured in step 5)	6) Adjust the lens iris so that the signal level becomes four times as high as that measured in the above step 5).
			Ⓣ B V SUB (VR5) [DR] ☆ Just before clipping of white level.	7) Adjust the respective VRs to the position just before the white level of the gray scale chart is clipped.
	 **PA board** TP101 IN GAIN B G R VR 102 VR 202 VR 302 VR 101 VR 201 VR 301 BLACK BAL (B) TP101 (G) TP201 (R) TP301 TP201 TP301		• R channel ◎ TP201 [PA] Ⓣ Lens iris ☆ 1.1 Vp-p	(Perform the same adjustment as for B-channel to obtain fourfold dynamic range on R-channel.) 8) Adjust the signal level on G-channel as specified.
			◎ TP301 [PA]	9) Measure the signal level on R-channel after the above step 8).
			Ⓣ Lens iris ☆ Signal level four times as high as that measured in step 9)	10)Adjust the lens iris so that the signal level becomes four times as high as that measured in the above step 9).
			Ⓣ R V SUB (VR7) [DR] ☆ Just before clipping of white level.	11)Adjust the respective VRs to the position just before the white level of the gray scale chart is clipped.
4	Clamp timing adjustment	• Gray scale chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	◎ TP201 [PA] Ⓣ Lens iris ☆ 1.1 Vp-p (white peak)	1) Adjust the Lens' iris to the specified value.
			Ⓣ SHP (VR2) [DR] ☆ Mechanical center position	2) Set the SHP VR to the mechanical center position.
			◎ TP201 [PA] Ⓣ CP (VR3) [DR] ☆ Just before video level goes down	3) Turn the CP VR fully counterclockwise. 4) Return the CP VR clockwise and set it to the point just before video level is going to decline.
	 **DR board** VR3 CP HP VR4 VR2 SHP VR5 VR6 VR7 B G R V SUB		 **PA board** IN GAIN B G R VR 102 VR 202 VR 302 VR 101 VR 201 VR 301 BLACK BAL (B) TP101 (G) TP201 (R) TP301 TP201 [PA]	

No.	Item	Measuring instruments & input signals	Measuring point (◎) Adjustment parts (⏀) Adjustment level (☆)	Adjustment procedure
5	Sample holding timing adjustment (Correlational double sampling timing)	• Gray scale chart ↓ Just scan • WFM • B/W TV monitor	◎ TP201 [PA] ⏀ SHP (VR2) [DR]	4) Roughly adjust the VR to maximize the signal level.
			◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ Lens iris ☆ 40% (0.29 V) NTSC: 0.29 Vp-p PAL : 0.28 Vp-p	6) Set the LOLUX switch to "ON" to set the camera to the LOLUX mode. 7) Set the electronic shutter to "1/100" (NTSC), "1/120" (PAL) position. 8) Adjust video level as specified with the lens iris.
		 LOLUX switch	◎ VIDEO OUT connector (with 75 Ω terminator) ⏀ SHP (VR2) [DR] ☆ Non vertical and horizontal stripes	9) Fine adjust the SHP VR until neither of vertical and horizontal strips is observed without declining the video output. 
6	Half pitch sampling timing adjustment	• In-megacycle chart ↓ Just scan • Oscilloscope (H-rate, 10 : 1)	◎ Y/C OUT connector (with 75 Ω terminator) (for Y signal observation) ⏀ HP (VR4) [DR] ☆ Maximum amplitude at high frequency	• Set the lens iris to "A" (auto) position. • Set the CONTOUR ON/OFF switch on the CP board to "OFF".
		 VR1 B. WHT TP4 (GND) VR5 A/D OFFSET VR2 R. WHT S1 OFF ON VR3 NAM LEVEL TP2 (RX) TP3 (TX) TP1 (GND) CP board IRIS S2 OVER NOR UNDER LOLUX S3 SPEED S4 SHUTTER ON OFF S5 OFF ON FUNC LENS TRIG CHECK CC/BLACK QREC ALC ALC/FAW " OFF "		1) Shoot the in-megacycle chart. 2) Observe the frequency response while adjusting the waveform so that its high frequency level becomes maximum.  3) Return the CONTOUR ON/OFF switch to "ON".

SECTION 4
EXPLODED VIEWS AND PARTS LIST

4.1 CAMERA HEAD ASSEMBLY

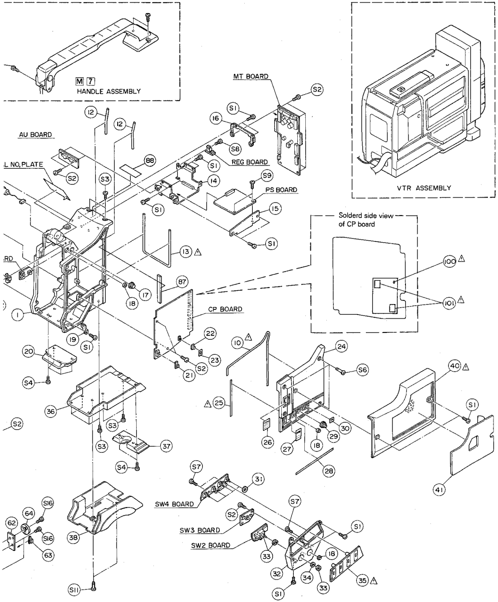
Note:
- Replacing marked ⚠ parts, be sure to use parts specified for safety purposes.
- For part number of Flat cables refer to the OVERALL WIRINGS on page 5-29.


M 7
HANDLE ASSEMBLY
VTR ASSEMBLY
MT BOARD
CC BOARD
AU BOARD
SERIAL NO.PLATE
REG BOARD
PS BOARD
SE BOARD
BNC BOARD
SW5 BOARD
Solderd side view of CP board
DR BOARD
PR BOARD
CP BOARD
PA BOARD
LE BOARD
SW1 BOARD
SW4 BOARD
SW3 BOARD
SW2 BOARD

- **Camera Head A**

Symbol No.	P
1	SC1015
2	SCV02
3	SCV07
4	SC4524
5	SC452
6	NNS30
7	SC434
8	SC101
⚠ 9	SC448
⚠ 10	SC448
11	SC434
⚠ 12	SC448
⚠ 13	SC448
14	SC316
15	SC452
16	SC452
17	SC434
18	SC448
19	SC452
20	SC204
21	SC452
22	SC452
23	SC452
24	SC101
⚠ 25	SC448
26	SC452
27	SC452
28	SC452
29	SC452
30	SC452
31	SC452
32	SC204
33	REFER TO "SW2 Bo
34	Q0309
⚠ 35	SC316
36	SC101
37	SC313
38	SC101
⚠ 40	SC101
⚠ 41	SC452
42	SC204
43	SS499
44	SC452
45	SCM07 SCM07
46	SC438
47	SC313
48	SC313
49	SC444
50	SC445
51	Q0309
52	SC313
53	SC438
54	SC438
55	SC438

SECTION 4
VIEWS AND PARTS LIST


M 7
HANDLE ASSEMBLY
MT BOARD
AU BOARD
L NO, PLATE
REG BOARD
PS BOARD
VTR ASSEMBLY
Solderd side view of CP board
CP BOARD
SW4 BOARD
SW3 BOARD
SW2 BOARD
RD
1
10 ⚠
12
13 ⚠
14
15
16
17
18
19
20
21
22
23
24
25 ⚠
26
27
28
29
30
31
32
33
34
35 ⚠
36
37
38
40 ⚠
41
62
63
64
87
88
100 ⚠
101 ⚠
S1
S2
S3
S4
S6
S7
S8
S9
S11
S16

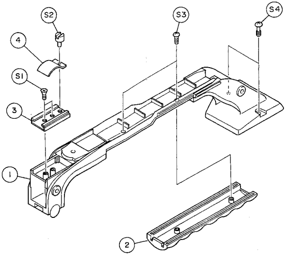
- **Camera Head Assembly list** M 6

M 6 M M ☐ ☐ ☐ ☐

Symbol No.	Part No.	Part Name	Description
1	SC10159-002	FRAME	
2	SCV0238-06S	CONNECTOR	6 pins Mic
3	SCV0749-001	BNC CONNECTOR	
4	SC45240-001	BNC BRACKET	
5	SC45260-001	STUD	
6	NNS3000N	NUT	
7	SC43403-001	KNOB	
8	SC10163-011	SIDE COVER (L)	
⚠ 9	SC44847-150	SHIELD TUBE	
⚠ 10	SC44847-260	SHIELD TUBE	
11	SC43407-001	BRACKET	
⚠ 12	SC44847-050	SHIELD TUBE	
⚠ 13	SC44847-240	SHIELD TUBE	
14	SC31656-001	RAIL BRACKET	
15	SC45238-001	ESCUTCHEON	
16	SC45236-001	BRACKET	
17	SC43406-001	SWITCH CAP	
18	SC44828-002	CAP	
19	SC45237-001	FR BRACKET	
20	SC20479-002	FRONT BASE	
21	SC45244-001	SLIDE KNOB	
22	SC45245-001	SLIDE KNOB	
23	SC45266-002	LABEL	
24	SC10164-001	SIDE COVER (R)	
⚠ 25	SC44847-050	SHIELD TUBE	
26	SC45256-001	NAME PLATE	FILTER
27	SC45248-002	NAME PLATE (IRIS)	IRIS
28	SC45259-002	NAME PLATE	(IRIS, LOLUX, SHUTTER)
29	SC45246-001	KNOB	SHUTTER SPEED
30	SC45248-011	NAME PLATE (SHU)	SHUTTER
31	SC45264-001	RUBBER	
32	SC20498-001	SWITCH PANEL	
33	REFER TO THE SECTION 6 "SW2 Board Assembly"	SWICH	
34	Q03091-202	WASHER	
⚠ 35	SC31660-001	SWITCH PLATE	
36	SC10161-002	BOTTOM FRAME	
37	SC31335-011	REAR BASE	
38	SC10168-002	SHOLDER PAD	
⚠ 40	SC10165-001	CHEEK PAD	
⚠ 41	SC45249-001	PAD SHEET	
42	SC20497-001	BASE BRACKET	
43	SS49917-010	SPACER	
44	SC45257-001	SHIELD PLATE	
45	SCM0729-N0A	OPTICAL BLOCK ASS'Y	(For U version)
	SCM0729-P0A	OPTICAL BLOCK ASS'Y	(For E version)
46	SC43855-001	LEVER	
47	SC31305-002	RING	
48	SC31307-001	FILTER BASE	
49	SC44482-002	STOPER	
50	SC44511-002	SPRING	
51	Q03093-841	WASHER	
52	SC31301-001	FILTER WHEEL	
53	SC43840-001	FILTER	CLEAR (3200K)
54	SC43841-001	FILTER	ORANGE (5600K)
55	SC43842-003	FILTER	BROWN (5600K + ND)

Symbol No.	Part No.	Part Name	Description
56	SC44488-001	SHEET	
57	SC44490-001	SHAFT	
58	SC44485-001	GEAR	
59	SC44491-001	SHAFT	
60	SC44486-001	SHAFT	
61	SC31306-002	COVER	
62	SC84505-002	FL BOARD	PWB ONLY
63	SCV1766-006	CONNECTOR	
64	SC44676-005	FILTER CAP ASS'Y	
65	SC10160-001	FRONT FRAME	
66	SC45127-002	VF RING	
67	SC31489-002	VF BASE	
68	SC40465-045	STEEL BALL	
69	SC45107-001	SPRING	
70	SC42550-011	CABLE CLAMPER	
71	SCV0238-06S	CONNECTOR	Necessary to be attached the capacitor, refer to the "OVERALL WIRING"
72	SC31323-003	FILTER KNOB	
73	SC44828-011	KNOB	
74	SC45239-003	LENS BRACKET	
75	REFER TO THE SECTION 6 "LE Board Assembly"	LENS CONNECTOR	
76	SC43825-002	CAP	
77	BYS4025M	BOLT	M4×25
⚠ 86	SC44847-170	SHIELD TUBE	
87	SC44963-031	SHEET	
88	SC45187-001	CAUTION LABEL	(For U version)
⚠ 100	SC44826-001	SHIELD PLATE	
⚠ 101	SSV1568-205	SPACER	
S1	SDSP3006M	SCREW	M3×6
S2	LPSP3006Z	SCREW	M3×6
S3	SDSP4008M	SCREW	M4×8
S4	SDSP3010M	SCREW	M3×10
S5	SDSP3005M	SCREW	M3×5
S6	SC43397-009	SCREW	
S7	SDSF3006M	SCREW	M3×6
S8	LPSP3008Z	SCREW	M3×8
S9	LPSP3004Z	SCREW	M3×4
S10	SDSP5020M	SCREW	M5×20
S11	DPSP4006M	SCREW	
S12	SSSP2604M	SCREW	M2×4
S13	SC40779-002	SCREW	
S14	SSSK2040M	SCREW	M2×40
S15	SPSK2025M	SCREW	M2×25
S16	SPSK2050M	SCREW	M2×50
S17	SDSP2006M	SCREW	M2×6
S18	TRS2606M	SCREW	M2×3
S19	DPSP3006Z	SCREW	M3×6
S20	SDSF2005M	SCREW	M2×5 for fixing the cable clamper ⑳

4.2 HANDLE ASSEMBLY



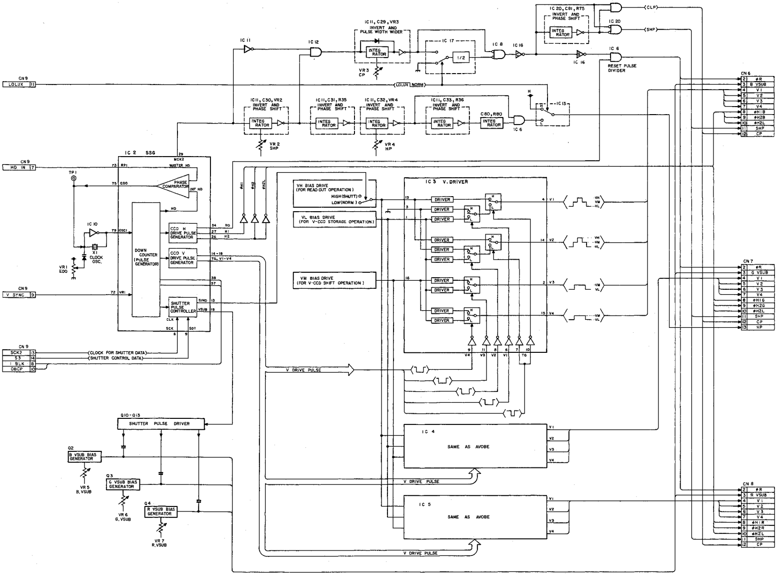
● HANDLE Assembly list M7

M7MM□□□□

Symbol No.	Part No.	Part Name	Description
1	SC10162-002	HANDLE	
2	SC31516-001	COVER	
3	SC40886-001	SHOE	
4	C40936	SPRING	
S1	SSSP3006N	SCREW	M3×6
S2	SC44821-001	SCREW	
S3	SDSF2606M	SCREW	M2.6×6
S4	SC43390-001	SCREW	

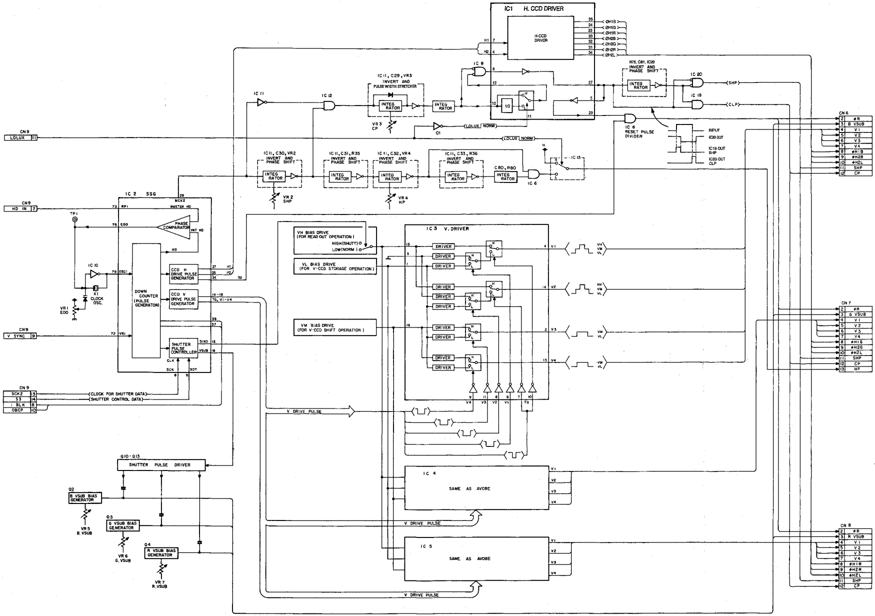
SECTION 5
CHARTS AND DIAGRAMS

5.1N N. DR BOARD [NTSC] BLOCK DIAGRAM

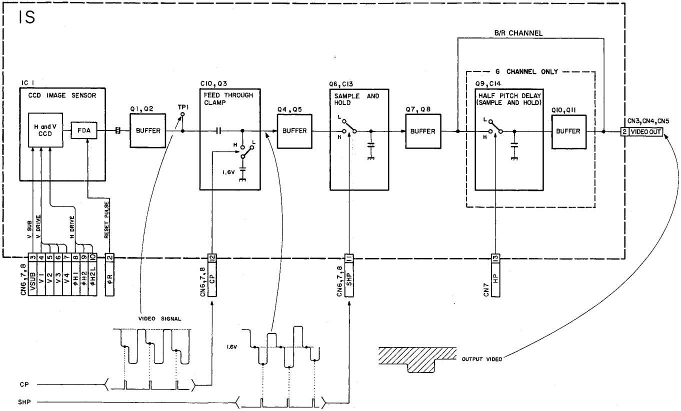


CN 9
LOLUX 11
HD IN 7
V SYNC 9
SCK2 13
S3 14
I BLK 8
OBCP 10
IC 11
IC 12
IC 11, C29, VR3
INVERT AND PULSE WIDTH WIDER
INTEG RATOR
VR 3 CP
IC 17
1/2
IC 8
IC 16
IC 19
IC 20
IC 20, C81, R75
INVERT AND PHASE SHIFT
(CLP)
(SHP)
IC 6
RESET PULSE DIVIDER
LOLUX NORM
IC 11, C30, VR2
INVERT AND PHASE SHIFT
VR 2 SHP
IC 11, C31, R35
INVERT AND PHASE SHIFT
IC 11, C32, VR4
INVERT AND PHASE SHIFT
VR 4 HP
IC 11, C33, R36
INVERT AND PHASE SHIFT
C80, R80
IC 6
H
IC 13
H
L
IC 2 SSG
29 MCK2
73 RP1 MASTER HD
TP1
75 E00
PHASE COMPARATOR
INT HD
HD
IC 10
79 OSCI
X1 CLOCK OSC.
VR1 E00
DOWN COUNTER (PULSE GENERATOR)
CCD H DRIVE PULSE GENERATOR
34 R0
27 H1
26 H2
CCD V DRIVE PULSE GENERATOR
14-18 TG, V1-V4
38
37
72 VR1
SHUTTER PULSE CONTROLLER
SIND 13
VSUB 19
CLK
SCK 8
SDT 9
(CLOCK FOR SHUTTER DATA)
(SHUTTER CONTROL DATA)
φH1
φH2
φH2L
VH BIAS DRIVE (FOR READ OUT OPERATION)
HIGH (SHUTT)
LOW (NORM)
VL BIAS DRIVE (FOR V-CCD STORAGE OPERATION)
VM BIAS DRIVE (FOR V-CCD SHIFT OPERATION)
IC 3 V. DRIVER
13
3
1
16
DRIVER
H
L
4 V1
14 V2
2 V3
15 V4
VH
VM
VL
9 V4
11 V3
8 V2
6 V1
7 10 TG
V DRIVE PULSE
Q10-Q13
SHUTTER PULSE DRIVER
Q2
B VSUB BIAS GENERATOR
VR 5 B, VSUB
Q3
G VSUB BIAS GENERATOR
VR 6 G, VSUB
Q4
R VSUB BIAS GENERATOR
VR 7 R, VSUB
IC 4
SAME AS AVOBE
IC 5
SAME AS AVOBE
V1
V2
V3
V4
V DRIVE PULSE
CN 6
2 φR
3 B VSUB
4 V1
5 V2
6 V3
7 V4
8 φH1B
9 φH2B
10 φH2L
11 SHP
12 CP
CN 7
2 φR
3 G VSUB
4 V1
5 V2
6 V3
7 V4
8 φH1G
9 φH2G
10 φH2L
11 SHP
12 CP
13 HP
CN 8
2 φR
3 R VSUB
4 V1
5 V2
6 V3
7 V4
8 φH1R
9 φH2R
10 φH2L
11 SHP
12 CP

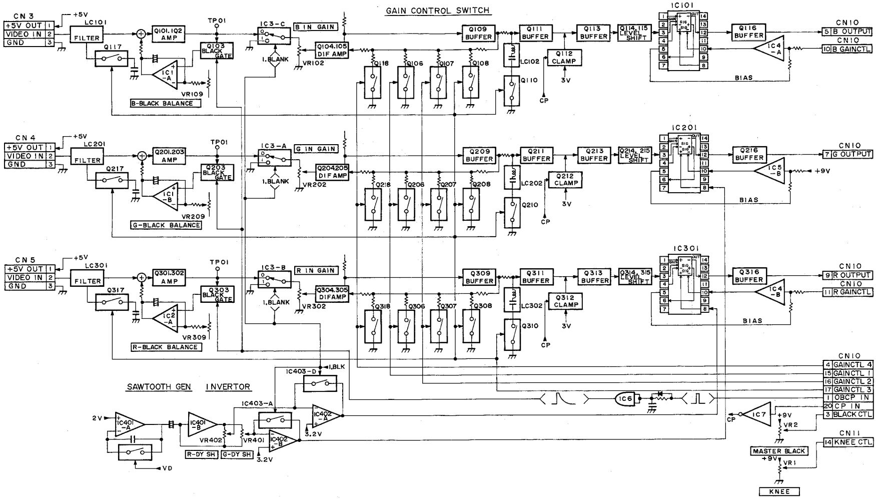
5.1P P. DR BOARD [PAL] BLOCK DIAGRAM


IC1 H. CCD DRIVER
H-CCD DRIVER
H1 7
H2 4
25 ØH1B
24 ØH1G
23 ØH1R
33 ØH2B
32 ØH2G
31 ØH2R
34 ØH2L
IC 8
6
12
10
1/2
H
L
11
27
5
29
IC 11, C29, VR3
INVERT AND PULSE WIDTH STRETCHER
INTEG RATOR
VR 3 CP
IC 11
IC 12
Q1
LOLUX NORM
R75, C81, IC20
INVERT AND PHASE SHIFT
IC 20
IC 19
SHP
CLP
IC 6 RESET PULSE DIVIDER
INPUT
IC20 OUT
IC19 OUT SHP
IC20 OUT CLP
CN 9 LOLUX 11
IC11, C30, VR2 INVERT AND PHASE SHIFT
VR 2 SHP
IC 11, C31, R35 INVERT AND PHASE SHIFT
IC 11, C32, VR4 INVERT AND PHASE SHIFT
VR 4 HP
IC 11, C33, R36 INVERT AND PHASE SHIFT
C80, R80
IC 6
IC 13
H
L
CN 6
2 φR
3 B VSUB
4 V1
5 V2
6 V3
7 V4
8 φH1B
9 φH2B
10 φH2L
11 SHP
12 CP
IC 2 SSG
29 MCK2
CN9 HD IN 7
73 RP1 MASTER HD
TP1
75 E00
PHASE COMPARATOR
INT HD
HD
IC 10
79 OSC1
X1 CLOCK OSC.
VR1 E00
DOWN COUNTER (PULSE GENERATOR)
CCD H DRIVE PULSE GENERATOR
27 H1
26 H2
34 R0
CCD V DRIVE PULSE GENERATOR
14-18 TG, V1-V4
39
37
CN9 V SYNC 9
72 VR1
SHUTTER PULSE CONTROLLER
SIND 13
VSUB 19
CLK
SCK 8
SDT 9
CN 9
SCK2 13
S3 14
I BLK 8
OBCP 10
CLOCK FOR SHUTTER DATA
SHUTTER CONTROL DATA
VH BIAS DRIVE (FOR READ OUT OPERATION)
HIGH (SHUTT)
LOW (NORM)
VL BIAS DRIVE (FOR V-CCD STORAGE OPERATION)
VM BIAS DRIVE (FOR V-CCD SHIFT OPERATION)
IC 3 V. DRIVER
13
3
1
16
DRIVER
4 V1
14 V2
2 V3
15 V4
VH VM VL
VM VL
9 V4
11 V3
8 V2
6 V1
7 10 TG
V DRIVE PULSE
CN 7
2 φR
3 G VSUB
4 V1
5 V2
6 V3
7 V4
8 φH1G
9 φH2G
10 φH2L
11 SHP
12 CP
13 HP
Q10-Q13
SHUTTER PULSE DRIVER
Q2 B VSUB BIAS GENERATOR
VR 5 B. VSUB
Q3 G VSUB BIAS GENERATOR
VR 6 G. VSUB
Q4 R VSUB BIAS GENERATOR
VR 7 R. VSUB
IC 4 SAME AS AVOBE
V1 V2 V3 V4
IC 5 SAME AS AVOBE
CN 8
2 φR
3 R VSUB
4 V1
5 V2
6 V3
7 V4
8 φH1R
9 φH2R
10 φH2L
11 SHP
12 CP

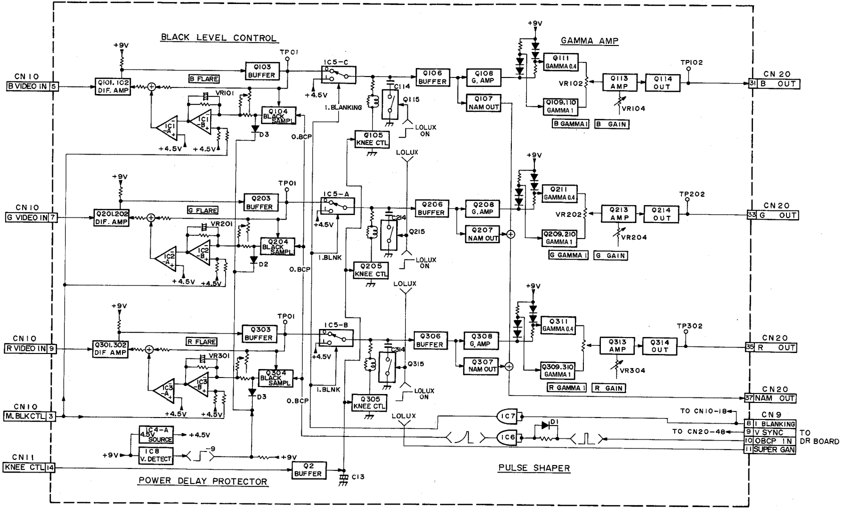
5.2 IS BOARD BLOCK DIAGRAM


IS
B/R CHANNEL
G CHANNEL ONLY
IC 1
CCD IMAGE SENSOR
H and V CCD
FDA
Q1, Q2
BUFFER
TP1
C10, Q3
FEED THROUGH CLAMP
H
L
1.6V
Q4, Q5
BUFFER
Q6, C13
SAMPLE AND HOLD
L
H
Q7, Q8
BUFFER
Q9, C14
HALF PITCH DELAY (SAMPLE AND HOLD)
L
H
Q10, Q11
BUFFER
CN3, CN4, CN5
2 VIDEO OUT
V SUB
V DRIVE
H DRIVE
RESET PULSE
CN6, 7, 8
3 VSUB
4 V1
5 V2
6 V3
7 V4
8 φH1
9 φH2
10 φH2L
2 φR
CN6, 7, 8
12 CP
CN6, 7, 8
11 SHP
CN7
13 HP
VIDEO SIGNAL
1.6V
OUTPUT VIDEO
CP
SHP

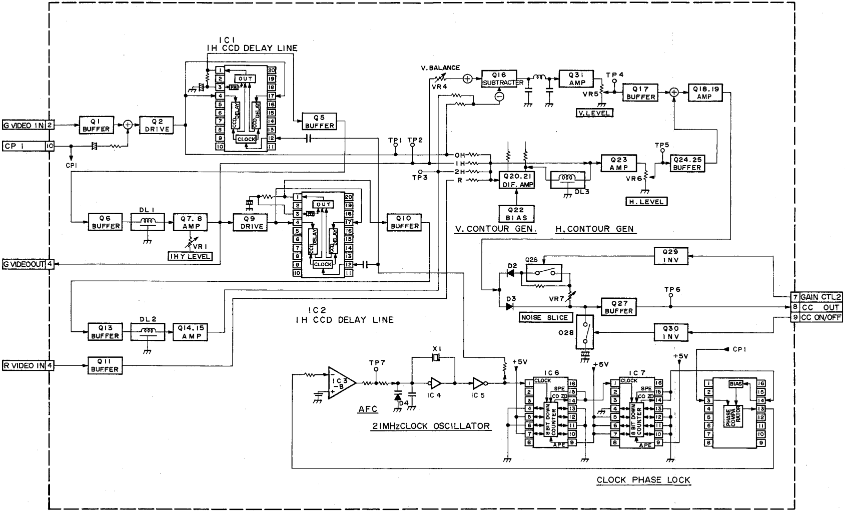
5.3 PA BOARD BLOCK DIAGRAM


GAIN CONTROL SWITCH
CN 3
+5V
+5V OUT 1
VIDEO IN 2
GND 3
LC101
FILTER
Q117
Q101.102 AMP
TP01
Q103 BLACK GATE
IC1 -A
VR109
B-BLACK BALANCE
IC3-C
B IN GAIN
1.BLANK
Q104.105 DIF AMP
VR102
Q118
Q106
Q107
Q108
Q109 BUFFER
Q111 BUFFER
LC102
Q110
Q112 CLAMP
3V
CP
Q113 BUFFER
Q114.115 LEVEL SHIFT
IC101
Q116 BUFFER
IC4 -A
BIAS
CN10
5 B OUTPUT
CN10
10 B GAINCTL
CN 4
+5V
+5V OUT 1
VIDEO IN 2
GND 3
LC201
FILTER
Q217
Q201.203 AMP
TP01
Q203 BLACK GATE
IC1 -B
VR209
G-BLACK BALANCE
IC3-A
G IN GAIN
1.BLANK
Q204.205 DIF AMP
VR202
Q218
Q206
Q207
Q208
Q209 BUFFER
Q211 BUFFER
LC202
Q210
Q212 CLAMP
3V
CP
Q213 BUFFER
Q214.215 LEVEL SHIFT
IC201
Q216 BUFFER
IC5 -B
+9V
BIAS
CN10
7 G OUTPUT
CN 5
+5V
+5V OUT 1
VIDEO IN 2
GND 3
LC301
FILTER
Q317
Q301.302 AMP
TP01
Q303 BLACK GATE
IC2 -A
VR309
R-BLACK BALANCE
IC3-B
R IN GAIN
1.BLANK
Q304.305 DIFAMP
VR302
Q318
Q306
Q307
Q308
Q309 BUFFER
Q311 BUFFER
LC302
Q310
Q312 CLAMP
3V
CP
Q313 BUFFER
Q314.315 LEVEL SHIFT
IC301
Q316 BUFFER
IC4 -B
BIAS
CN10
9 R OUTPUT
CN10
11 R GAINCTL
1,BLK
IC403-D
SAWTOOTH GEN
INVERTOR
IC403-A
2V
IC401 -A
IC401 -B
VR402
VR401
IC402 -A
IC402 -B
3.2V
3.2V
R-DY SH
G-DY SH
VD
IC6
IC7
CP
+9V
VR2
MASTER BLACK
+9V
VR1
KNEE
CN10
4 GAINCTL 4
15 GAINCTL 1
16 GAINCTL 2
17 GAINCTL 3
1 OBCP IN
20 CP IN
3 BLACK CTL
CN11
14 KNEE CTL

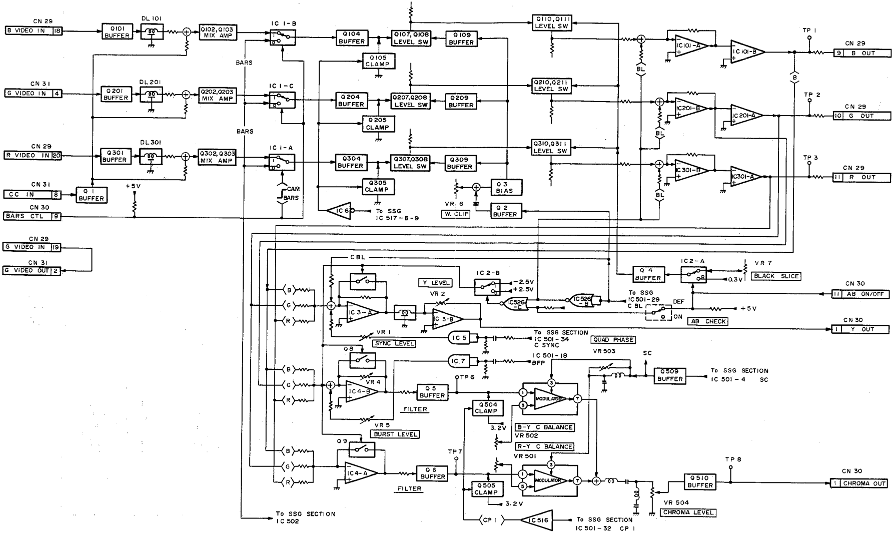
5.4 PR BOARD BLOCK DIAGRAM


BLACK LEVEL CONTROL
GAMMA AMP
+9V
TP01
TP102
TP202
TP302
CN 10
B VIDEO IN 5
G VIDEO IN 7
R VIDEO IN 9
M. BLKCTL 3
CN 11
KNEE CTL 14
Q101, IC2 DIF. AMP
Q201.202 DIF. AMP
Q301.302 DIF AMP
B FLARE
G FLARE
R FLARE
Q103 BUFFER
Q203 BUFFER
Q303 BUFFER
VR101
VR201
VR301
IC1-A
IC1-B
IC2-A
IC2-B
IC3-A
IC3-B
+4.5V
Q104 BLACK SAMPL
Q204 BLACK SAMPL
Q304 BLACK SAMPL
D3
D2
O.BCP
IC5-C
IC5-A
IC5-B
I. BLANKING
I.BLNK
C114
C214
C314
Q115
Q215
Q315
LOLUX ON
LOLUX
Q105 KNEE CTL
Q205 KNEE CTL
Q305 KNEE CTL
Q106 BUFFER
Q206 BUFFER
Q306 BUFFER
Q108 G. AMP
Q208 G. AMP
Q308 G. AMP
Q107 NAM OUT
Q207 NAM OUT
Q307 NAM OUT
Q111 GAMMA 0.4
Q211 GAMMA 0.4
Q311 GAMMA 0.4
Q109.110 GAMMA 1
Q209.210 GAMMA 1
Q309.310 GAMMA 1
VR102
VR202
VR104
VR204
VR304
Q113 AMP
Q213 AMP
Q313 AMP
Q114 OUT
Q214 OUT
Q314 OUT
B GAMMA I
B GAIN
G GAMMA I
G GAIN
R GAMMA I
R GAIN
CN 20
31 B OUT
33 G OUT
35 R OUT
37 NAM OUT
CN 9
8 I BLANKING
9 V SYNC
10 OBCP IN
11 SUPER GAN
TO DR BOARD
TO CN10-18
TO CN20-48
IC7
IC6
D1
PULSE SHAPER
IC4-A 4.5V SOURCE
IC8 V. DETECT
-9
Q2 BUFFER
C13
POWER DELAY PROTECTOR

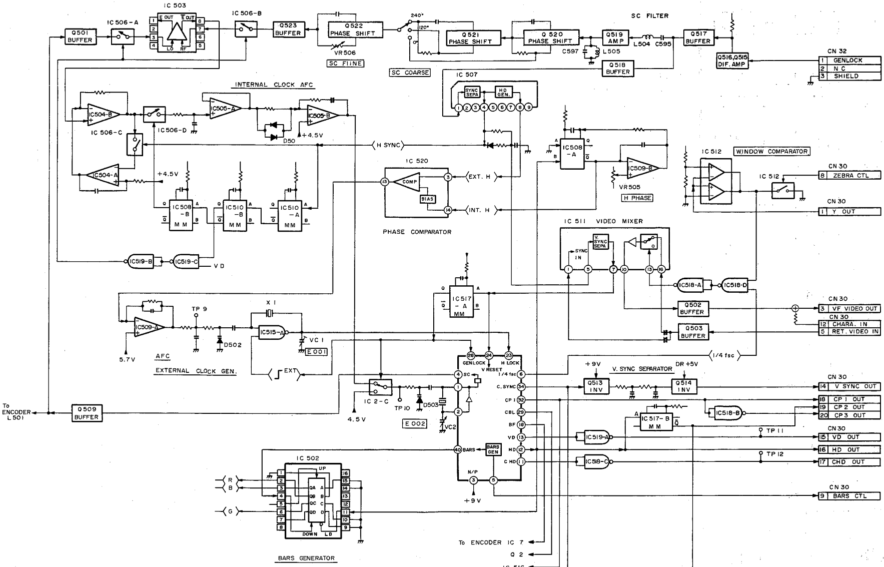
5.5 CC BOARD BLOCK DIAGRAM


IC1
1H CCD DELAY LINE
OUT
FB
CCD DELAY
CLOCK
G VIDEO IN 2
CP1 10
CP1
Q1 BUFFER
Q2 DRIVE
Q5 BUFFER
Q6 BUFFER
DL1
Q7.8 AMP
VR1
1HY LEVEL
Q9 DRIVE
Q10 BUFFER
G VIDEOOUT 4
Q13 BUFFER
DL2
Q14.15 AMP
R VIDEO IN 4
Q11 BUFFER
IC2
1H CCD DELAY LINE
V.BALANCE
VR4
Q16 SUBTRACTER
Q31 AMP
TP4
VR5
V.LEVEL
Q17 BUFFER
Q18.19 AMP
TP1
TP2
TP3
0H
1H
2H
R
Q20.21 DIF. AMP
Q22 BIAS
DL3
Q23 AMP
VR6
H.LEVEL
TP5
Q24.25 BUFFER
V. CONTOUR GEN.
H. CONTOUR GEN
Q29 INV
Q26
D2
D3
VR7
TP6
Q27 BUFFER
NOISE SLICE
Q28
Q30 INV
7 GAIN CTL2
8 CC OUT
9 CC ON/OFF
CP1
X1
TP7
IC3 -B
IC4
IC5
D4
AFC
21MHz CLOCK OSCILLATOR
+5V
IC6
IC7
CLOCK
SPE
CO ZD
8 BIT DOWN COUNTER
APE
BIAS
PHASE COMPARATOR
CLOCK PHASE LOCK

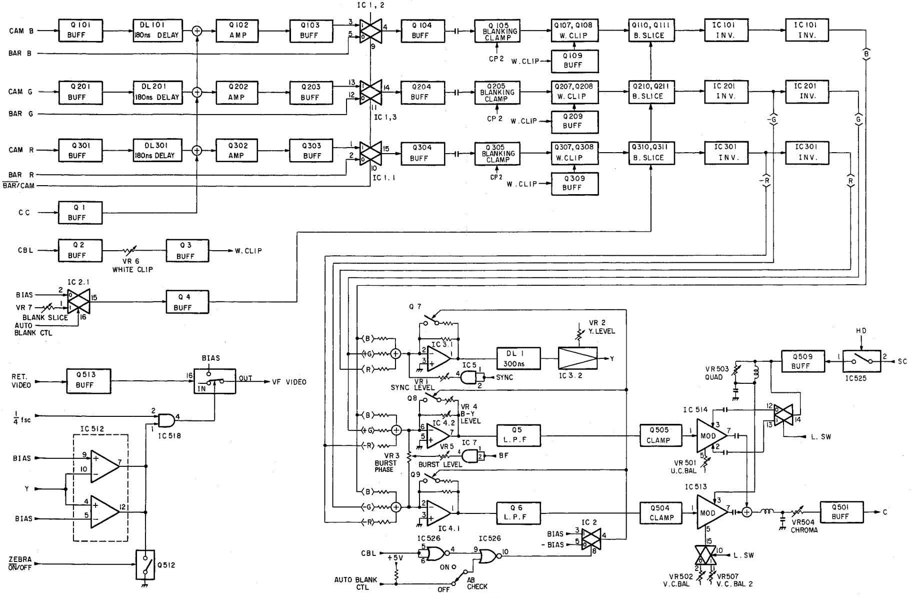
5.6N N. SE BOARD (Color Encoder section) [NTSC] BLOCK DIAGRAM


CN 29
B VIDEO IN 18
Q101 BUFFER
DL 101
Q102,Q103 MIX AMP
IC 1-B
Q104 BUFFER
Q107,Q108 LEVEL SW
Q109 BUFFER
Q105 CLAMP
Q110,Q111 LEVEL SW
IC101-A
IC101-B
TP 1
CN 29
9 B OUT
BL
B
BARS
CN 31
G VIDEO IN 4
Q201 BUFFER
DL201
Q202,Q203 MIX AMP
IC 1-C
Q204 BUFFER
Q207,Q208 LEVEL SW
Q209 BUFFER
Q205 CLAMP
Q210,Q211 LEVEL SW
IC201-B
IC201-A
TP 2
CN 29
10 G OUT
BARS
CN 29
R VIDEO IN 20
Q301 BUFFER
DL301
Q302,Q303 MIX AMP
IC 1-A
Q304 BUFFER
Q307,Q308 LEVEL SW
Q309 BUFFER
Q305 CLAMP
Q310,Q311 LEVEL SW
IC301-B
IC301-A
TP 3
CN 29
11 R OUT
CN 31
CC IN 8
Q 1 BUFFER
+5V
CAM
BARS
CN 30
BARS CTL 9
IC 6
To SSG IC 517-B-9
VR 6
W. CLIP
Q 3 BIAS
Q 2 BUFFER
CN 29
G VIDEO IN 19
CN 31
G VIDEO OUT 2
CBL
IC 2-B
-2.5V
+2.5V
Y LEVEL
VR 2
IC 3-A
IC 3-B
IC526-C
IC526-B
To SSG IC501-29 C BL
DEF
ON
+5V
AB CHECK
IC2-A
VR 7
Q 4 BUFFER
0.3V
BLACK SLICE
CN 30
11 AB ON/OFF
CN 30
1 Y OUT
VR 1
SYNC LEVEL
IC 5
To SSG SECTION IC 501-34 C SYNC
QUAD PHASE
VR 503
SC
Q8
IC 7
IC 501-18 BFP
VR 4
IC4-B
TP 6
Q 5 BUFFER
Q504 CLAMP
MODULATOR
Q509 BUFFER
To SSG SECTION IC 501-4 SC
FILTER
VR 5
BURST LEVEL
3.2V
B-Y C BALANCE
VR 502
R-Y C BALANCE
VR 501
Q 9
TP 7
IC4-A
Q 6 BUFFER
Q505 CLAMP
MODULATOR
FILTER
3.2V
TP 8
Q510 BUFFER
CN 30
1 CHROMA OUT
VR 504
CHROMA LEVEL
To SSG SECTION IC 502
CP 1
IC516
To SSG SECTION IC 501-32 CP 1
B
G
R

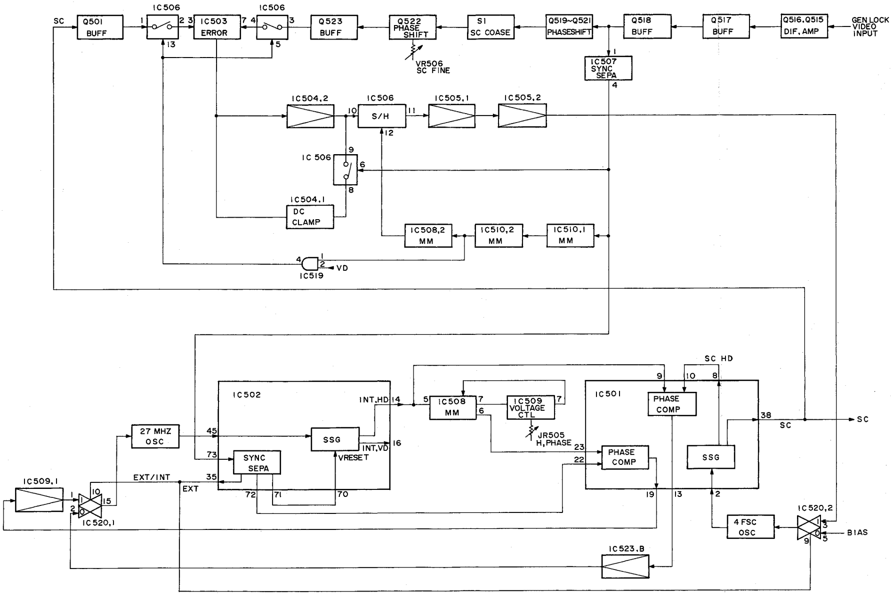
5.7N N. SE BOARD (SSG section) [NTSC] BLOCK DIAGRAM


IC 503
E OUT
Ē OUT
LO
RF
IC 506-A
Q501 BUFFER
IC 506-B
Q523 BUFFER
Q522 PHASE SHIFT
VR506
SC FINE
240°
120°
0°
SC COARSE
Q521 PHASE SHIFT
Q 520 PHASE SHIFT
C597
L505
Q519 AMP
L504
C595
SC FILTER
Q517 BUFFER
Q518 BUFFER
Q516,Q515 DIF. AMP
CN 32
1 GENLOCK
2 N C
3 SHIELD
IC 507
SYNC SEPA
HD GEN.
INTERNAL CLOCK AFC
IC504-B
IC 506-C
IC506-D
IC505-A
IC505-B
D50
+4.5V
H SYNC
IC504-A
+4.5V
IC508 -B MM
IC510 -B MM
IC510 -A MM
Q
Q̄
A
B
IC 520
COMP
BIAS
EXT. H
INT. H
PHASE COMPARATOR
IC508 -A
IC509-B
VR505
H PHASE
IC 512
WINDOW COMPARATOR
IC 512
CN 30
8 ZEBRA CTL
CN 30
1 Y OUT
IC519-B
IC519-C
V D
IC 511 VIDEO MIXER
SYNC IN
V. SYNC SEPA
IC518-A
IC518-D
IC517 - A MM
TP 9
X 1
IC509-A
IC515-A
VC 1
E 001
D502
5.7V
AFC
EXTERNAL CLOCK GEN.
EXT
Q502 BUFFER
Q503 BUFFER
CN 30
3 VF VIDEO OUT
CN 30
12 CHARA. IN
5 RET. VIDEO IN
1/4 fsc
GENLOCK
V RESET
H LOCK
SC
1/4 fsc
C. SYNC
CP 1
CBL
BF
VD
HD
C HD
BARS
BARS GEN
N/P
+9 V
IC 2-C
TP 10
D503
VC2
E 002
4.5 V
To ENCODER L 501
Q509 BUFFER
+9V
V. SYNC SEPARATOR
DR +5V
Q513 INV
Q514 INV
CN 30
14 V SYNC OUT
18 CP 1 OUT
19 CP 2 OUT
20 CP 3 OUT
IC518-B
IC 517- B MM
TP 11
CN 30
15 VD OUT
IC519-A
16 HD OUT
TP 12
IC518-C
17 CHD OUT
CN 30
9 BARS CTL
IC 502
UP
QA
QB
QC
QD
DOWN
LD
R
B
G
BARS GENERATOR
To ENCODER IC 7
Q 2
IC 516
IC 5
IC 6

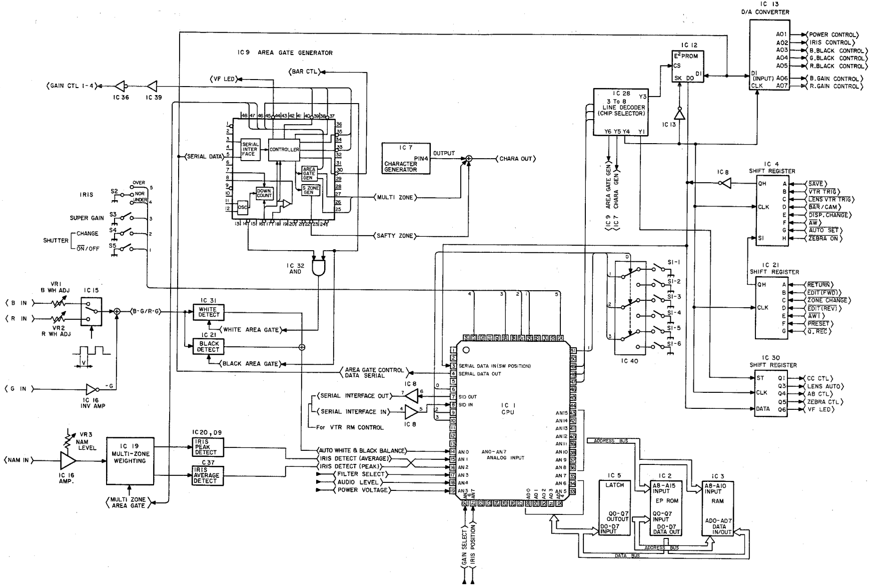
5.6P P. SE BOARD (Color Encoder section) [PAL] BLOCK DIAGRAM


CAM B
BAR B
CAM G
BAR G
CAM R
BAR R
BAR/CAM
CC
CBL
Q101 BUFF
DL101 180ns DELAY
Q102 AMP
Q103 BUFF
IC 1, 2
Q104 BUFF
Q105 BLANKING CLAMP
CP2
W. CLIP
Q107, Q108 W. CLIP
Q109 BUFF
Q110, Q111 B. SLICE
IC101 INV.
IC101 INV.
Q201 BUFF
DL201 180ns DELAY
Q202 AMP
Q203 BUFF
IC 1,3
Q204 BUFF
Q205 BLANKING CLAMP
Q207, Q208 W. CLIP
Q209 BUFF
Q210, Q211 B. SLICE
IC 201 INV.
IC 201 INV.
Q301 BUFF
DL301 180ns DELAY
Q302 AMP
Q303 BUFF
IC 1.1
Q304 BUFF
Q305 BLANKING CLAMP
Q307, Q308 W.CLIP
Q309 BUFF
Q310, Q311 B. SLICE
IC 301 INV.
IC301 INV.
B
-G
G
-R
R
Q1 BUFF
Q2 BUFF
VR 6 WHITE CLIP
Q3 BUFF
W. CLIP
IC 2.1
BIAS
VR 7
BLANK SLICE
AUTO BLANK CTL
Q4 BUFF
RET. VIDEO
Q513 BUFF
BIAS
IN
OUT
VF VIDEO
1/4 fsc
IC518
IC512
BIAS
Y
BIAS
ZEBRA ON/OFF
Q512
Q7
IC 3.1
VR 1 SYNC LEVEL
IC 5
SYNC
DL 1 300ns
VR 2 Y. LEVEL
IC 3.2
Y
Q8
VR 4 B-Y LEVEL
IC 4.2
VR 5 BURST LEVEL
IC 7
BF
VR 3 BURST PHASE
Q5 L.P.F
Q9
IC 4.1
Q6 L.P.F
IC 2
BIAS
- BIAS
IC526
IC526
CBL
+5V
ON
OFF
AB CHECK
AUTO BLANK CTL
Q505 CLAMP
IC 514
MOD
VR 501 U.C.BAL
IC513
Q504 CLAMP
MOD
VR502 V.C.BAL
VR507 V. C. BAL 2
L. SW
L. SW
VR503 QUAD
Q509 BUFF
HD
IC525
SC
VR504 CHROMA
Q501 BUFF
C

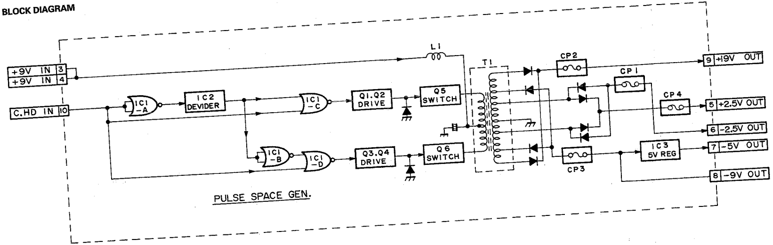
5.7P P. SE BOARD (SSG section) [PAL] BLOCK DIAGRAM


SC
Q501 BUFF
IC506
1
2
13
3
IC503 ERROR
7
4
IC506
3
5
Q523 BUFF
Q522 PHASE SHIFT
VR506 SC FINE
S1 SC COASE
Q519~Q521 PHASESHIFT
Q518 BUFF
Q517 BUFF
Q516,Q515 DIF, AMP
GEN LOCK VIDEO INPUT
1
IC507 SYNC SEPA
4
IC504,2
IC506
10
S/H
11
12
IC505,1
IC505,2
IC 506
9
6
8
IC504,1 DC CLAMP
IC508,2 MM
IC510,2 MM
IC510,1 MM
4
1
2
VD
IC519
IC502
INT,HD
14
16
INT,VD
SSG
VRESET
45
73
SYNC SEPA
35
72
71
70
EXT/INT
EXT
27 MHZ OSC
IC509,1
1
2
10
15
IC520,1
5
IC508 MM
7
6
IC509 VOLTAGE CTL
7
JR505 H,PHASE
23
22
IC501
9
10
8
SC HD
PHASE COMP
PHASE COMP
SSG
38
SC
SC
19
13
2
4 FSC OSC
IC520,2
1
3
5
9
BIAS
IC523,B

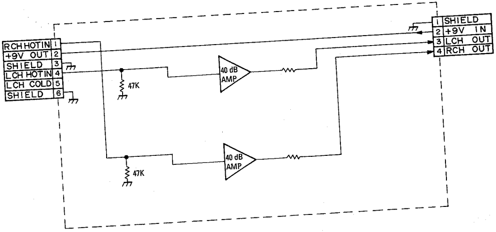
5.8 CP BOARD BLOCK DIAGRAM


IC 9 AREA GATE GENERATOR
SERIAL INTER FACE
CONTROLLER
AREA GATE GEN
S ZONE GEN
DOWN COUNT
OSC
(GAIN CTL 1-4)
IC 36
IC 39
(VF LED)
(BAR CTL)
(SERIAL DATA)
IRIS
OVER
NOR
UNDER
SUPER GAIN
SHUTTER
CHANGE
ON/OFF
S2
S3
S4
S5
IC 7 CHARACTER GENERATOR
PIN4
OUTPUT
(CHARA OUT)
(MULTI ZONE)
(SAFTY ZONE)
IC 32 AND
VR1 B WH ADJ
VR2 R WH ADJ
IC 15
(B IN)
(R IN)
(B-G/R-G)
(G IN)
IC 16 INV AMP
-G
V
IC 31 WHITE DETECT
(WHITE AREA GATE)
IC 21 BLACK DETECT
(BLACK AREA GATE)
(AREA GATE CONTROL DATA SERIAL)
IC 8
(SERIAL INTERFACE OUT)
(SERIAL INTERFACE IN)
For VTR RM CONTROL
VR3 NAM LEVEL
(NAM IN)
IC 16 AMP.
IC 19 MULTI-ZONE WEIGHTING
IC20, D9 IRIS PEAK DETECT
C37 IRIS AVERAGE DETECT
(MULTI ZONE AREA GATE)
(AUTO WHITE & BLACK BALANCE)
(IRIS DETECT (AVERAGE))
(IRIS DETECT (PEAK))
(FILTER SELECT)
(AUDIO LEVEL)
(POWER VOLTAGE)
IC 1 CPU
SERIAL DATA IN (SW POSITION)
SERIAL DATA OUT
SID OUT
SID IN
AN0-AN7 ANALOG INPUT
AN0
AN1
AN2
AN3
AN4
AN5
AN6
AN7
AN8
AN9
AN10
AN11
AN12
AN13
AN14
AN15
AD0
AD1
AD2
AD3
AD4
(GAIN SELECT)
(IRIS POSITION)
IC 28 3 To 8 LINE DECODER (CHIP SELECTOR)
Y3
Y6 Y5 Y4 Y1
(IC 9 AREA GATE GEN)
(IC 7 CHARA GEN)
IC 12 E²PROM
CS
SK DO
DI
IC 13
IC 13 D/A CONVERTER
DI (INPUT)
CLK
AO1 (POWER CONTROL)
AO2 (IRIS CONTROL)
AO3 (B.BLACK CONTROL)
AO4 (G.BLACK CONTROL)
AO5 (R.BLACK CONTROL)
AO6 (B.GAIN CONTROL)
AO7 (R.GAIN CONTROL)
IC 8
IC 4 SHIFT REGISTER
QH
CLK
SI
A (SAVE)
B (VTR TRIG)
C (LENS VTR TRIG)
D (BAR/CAM)
E (DISP. CHANGE)
F (AW)
G (AUTO SET)
H (ZEBRA ON)
IC 21 SHIFT REGISTER
A (RETURN)
B (EDIT (FWD))
C (ZONE CHANGE)
D (EDIT (REV))
E (AWT)
F (PRESET)
G (Q. REC)
S1-1
S1-2
S1-3
S1-4
S1-5
S1-6
IC 40
IC 30 SHIFT REGISTER
ST
DATA
Q1 (CC CTL)
Q3 (LENS AUTO)
Q4 (AB CTL)
Q5 (ZEBRA CTL)
Q6 (VF LED)
ADDRESS BUS
DATA BUS
IC 5 LATCH
Q0-Q7 OUTOUT
D0-D7 INPUT
IC 2 A8-A15 INPUT
EP ROM
Q0-Q7 INPUT
D0-D7 DATA OUT
IC 3 A8-A10 INPUT
RAM
AD0-AD7 DATA IN/OUT

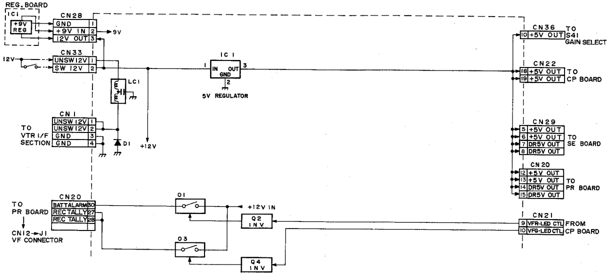
5.9 PS BOARD BLOCK DIAGRAM


+9V IN 3
+9V IN 4
C.HD IN 10
IC1 -A
IC2 DEVIDER
IC1 -C
IC1 -B
IC1 -D
Q1.Q2 DRIVE
Q3.Q4 DRIVE
Q5 SWITCH
Q6 SWITCH
L1
T1
CP2
CP1
CP4
CP3
IC3 5V REG
9 +19V OUT
5 +2.5V OUT
6 -2.5V OUT
7 -5V OUT
8 -9V OUT
PULSE SPACE GEN.

5.10 AU BOARD BLOCK DIAGRAM


RCH HOTIN 1
+9V OUT 2
SHIELD 3
LCH HOTIN 4
LCH COLD 5
SHIELD 6
47K
40 dB AMP
47K
40 dB AMP
1 SHIELD
2 +9V IN
3 LCH OUT
4 RCH OUT

5.11 MT BOARD BLOCK DIAGRAM


REG. BOARD
IC1
+9V REG
CN28
GND 1
+9V IN 2
12V OUT 3
9V
CN33
12V
UNSW12V 1
SW 12V 2
LC1
CN1
TO VTR I/F SECTION
UNSW12V 1
UNSW12V 2
GND 3
GND 4
D1
+12V
IC1
1
IN
OUT
3
GND
2
5V REGULATOR
CN36
10 +5V OUT
TO S41 GAIN SELECT
CN22
18 +5V OUT
19 +5V OUT
TO CP BOARD
CN29
5 +5V OUT
6 +5V OUT
7 DR5V OUT
8 DR5V OUT
TO SE BOARD
CN20
12 +5V OUT
13 +5V OUT
14 DR5V OUT
15 DR5V OUT
TO PR BOARD
CN20
TO PR BOARD
CN12→J1 VF CONNECTOR
BATTALARM 30
REC TALLY 27
REC TALLY 28
Q1
+12V IN
Q2 INV
Q3
Q4 INV
CN21
9 VFR-LED CTL
10 VFG-LED CTL
FROM CP BOARD

■ SCHEMATIC DIAGRAM NOTES

● Schematic safety precaution

▨ Parts are safety related parts.
When replacing them, be sure to use the specified parts.

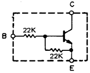
Voltage and waveform measurements.

Voltage:	Measured with digital voltmeter in DC range; iris closed.
Waveform:	Grey scale illuminated at more than 4000 lux at 3200 K lighting.

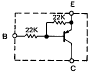
●Terminal logic
Top bar of terminal name show input or output logic.
Top bar shows, the control circuit become active at negative (low) logic input for example.

●Digital transistors

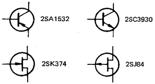
DTC124EU



DTA124EU



●Unless otherwise specified transistors and F.E.T.s are:

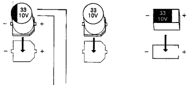


●Definistion of the (A) and the (B) or circuit boards diagrams
(A) : Side on which discrete parts are assembled
(B) : Side on which only chip parts are assembled.

■ REPLACING SUBMINIATURE "CHIP" PARTS

- Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
- Chip resistors used in some circuits are of high precision type having little error in resistance.
  To demonstrate the full capacity of this camera head, place an order for proper parts referring to the diagrams and parts lists in the sections 6.
- Soldering cautions:
  1) Do not apply heat for more than 3 seconds.
  2) Avoid using a rubbing stroke when soldering.
  3) Discard removed chips; do not reuse them.
  4) Supplementary cementing is not required.
  5) Use care not to scratch or otherwise damage the chips.
- Resistors and capacitors are not interchangeable with chip parts which are used in the color video cameras BY-110, KY-210, etc., because of difference in size. In case of order for parts, refer to the section 6 "ELECTRICAL PARTS LIST".
- Polarities of chip electrolytic capacitors and chip tantalum capacitors used in this model are as illustrated below. Polarities indicated by silk-screen printing on P.C. boards are also shown below. When replacing such parts, make sure of polarities.

- Electrolytic capacitor
- Non-polarized electrolytic capacitor
- Tantalum capacitor



Capacitance (μF) Example: 33 μF
Dielectric strength (V) Example: 10 V

5.12N N. DR CIRCUIT BOARD [NTSC]

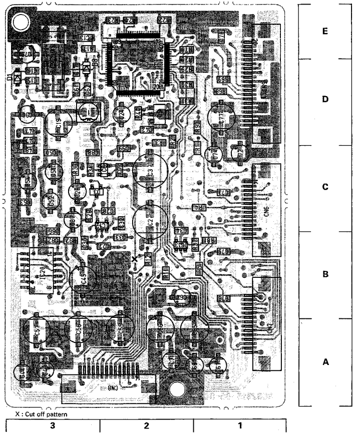
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

A-1C
Side — A; 1 — X axis; C — Y axis

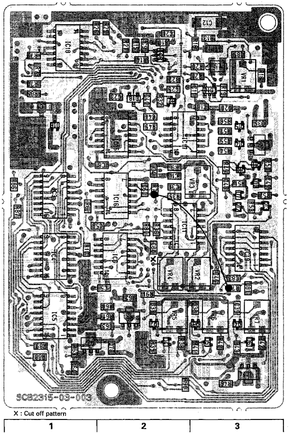
IC2	A-2D
IC3	B-1C
IC4	B-1B
IC5	B-1A
IC6	B-2B
IC8	A-2C
IC9	B-2E
IC10	B-3D
IC11	B-2B
IC12	A-2C
IC13	A-2B
IC14	B-3A
IC15	B-2C
IC16	B-2C
IC17	B-2C
IC18	B-1E
IC19	B-3B
IC20	A-3B
Q2	B-2A
Q3	B-3A
Q4	B-3A
Q5	A-2D
Q6	B-2B
Q7	B-1A
Q9	B-3D
Q10	B-3C
Q11	B-3C
Q12	B-3C
Q13	B-3C
Q14	B-3D
Q15	B-3D
D1	A-3D
D2	B-2D
D3	A-2C
D4	B-2A
D5	B-3A
D6	B-3A
D7	B-3C
D8	A-3D
D10	B-3C
D16	B-1D
D18	B-2D
R1	A-1C
R2	A-2D
R3	A-2D
R4	A-1C
R5	A-1B
R6	B-1C
R9	B-2C
R10	B-1B
R11	A-2B
R12	A-2B
R13	B-3E
R14	B-2D
R15	B-2E
R16	B-3E
R17	A-3E
R18	B-3D
R19	B-3D
R20	B-3D
R21	B-3D
R22	B-2D
R23	A-2E
R24	A-2E
R25	B-2E
R26	B-1E
R27	B-2E
R28	A-2D
R29	A-2D
R30	A-2D
R31	A-2D
R32	B-2D
R33	A-3C
R34	A-3C
R35	B-2C
R36	B-2C
R37	A-1B
R38	B-2A
R39	B-2A
R40	B-3A
R41	B-3A
R42	B-3A
R43	B-3A
R44	A-2D
R45	B-2D
R46	B-3A
R47	A-3D
R48	A-3C
R49	B-3C
R50	B-3C
R51	B-3C
R52	B-3C
R53	B-3C
R54	B-3C
R55	B-3D
R56	B-3D
R57	B-3D
R60	B-2B
R61	B-2B
R62	B-2B
R63	B-1A
R64	B-1A
R68	A-1D
R69	A-1D
R70	B-1D
R72	B-1E
R73	B-1D
R74	B-2C
R75	B-3B
R78	A-2E
R80	B-2C
R81	A-1B
R85	B-1D
R86	B-1C
R87	B-1C
R88	B-1A
R89	B-1A
R90	B-2A
R91	B-2B
R92	A-3B
R93	A-1D
VR1	B-3D
VR2	B-3B
VR3	B-3C
VR4	B-2B
VR5	B-2B
VR6	B-3B
VR7	B-3B
C1	B-2C
C2	A-2C
C3	A-2C
C4	B-2C
C5	B-2B
C7	A-2C
C8	B-2C
C9	B-2E
C10	B-2E
C11	B-3D
C12	B-3E
C13	A-3E
C15	A-3D
C16	A-3D
C17	A-3D
C18	B-3D
C19	A-3D
C20	B-3D
C21	B-2E
C22	A-2E
C23	B-2D
C24	A-2D
C25	B-2D
C26	A-3C
C27	A-2B
C28	A-2C
C29	A-3C
C30	A-3B
C31	B-2C
C32	A-2C
C33	A-2B
C34	A-2C
C35	B-3D
C36	A-3D
C37	B-2B
C38	B-3B
C39	B-3B
C40	B-2D
C41	B-2D
C42	A-2D
C43	A-3A
C44	A-3A
C45	A-3B
C46	B-3B
C47	A-3D
C48	B-3C
C49	B-3C
C50	A-3C
C51	A-3C
C52	A-3C
C53	A-3C
C54	A-3C
C55	A-2A
C56	A-3A
C57	A-3A
C58	B-1C
C59	A-2C
C60	B-2C
C61	A-3D
C62	A-3D
C63	B-2A
C64	A-2B
C65	A-1A
C66	A-2A
C67	A-1A
C68	A-1A
C70	B-2A
C71	A-2A
C72	A-1C
C73	A-1C
C74	A-1C
C75	A-1B
C76	A-1B
C77	A-1D
C78	A-1E
C79	A-3E
C80	B-2B
C81	B-3B
C82	A-3B
C83	B-3B
C85	B-3E
C86	A-3C
C87	A-3C
C88	A-3C
L1	A-3D
L5	B-3D
TP1	B-3E
LC1	B-1D
CN6	A-1C
CN7	A-1A
CN8	A-2A
CN9	A-1D
X1	A-3D

— Component Side (A) —


E
D
C
B
A
3
2
1
CN6
CN8
CN9
IC20
C2
C3

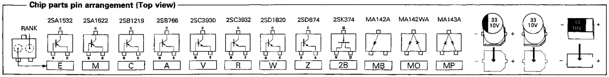
X : Cut off pattern

— Soldered Side (B) —


1
2
3
SC82315-03-003
IC16
IC17
IC18
IC19
VR1
VR2
VR3
VR4
VR5
VR6
VR7

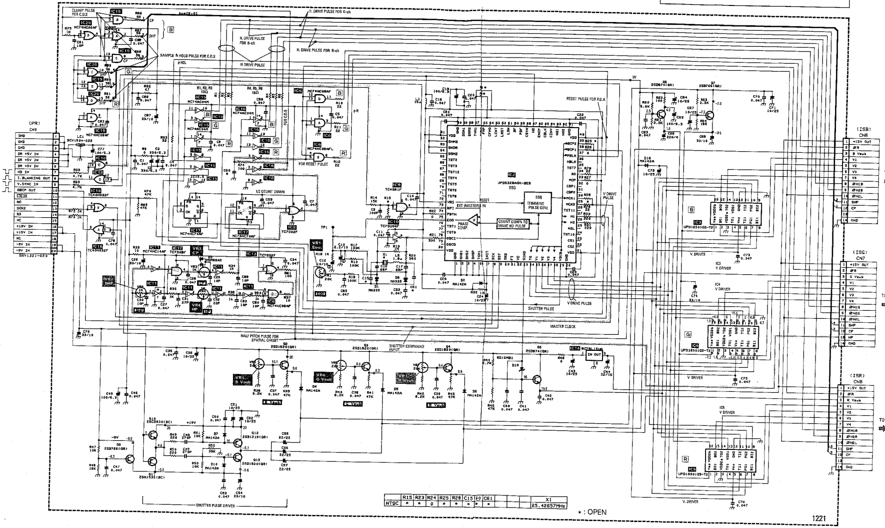
X : Cut off pattern

Chip parts pin arrangement (Top view)


RANK
2SA1532
2SA1622
2SB1219
2SB766
2SC3930
2SC3932
2SD1820
2SD874
2SK374
MA142A
MA142WA
MA143A
E
M
C
A
V
R
W
Z
2B
MB
MO
MP
C
B
E
G
S
D
33
10V
-
+

5.13N N. DR BOARD SCHEMATIC DIAGRAM [NTSC] 5 1 N
(CCD Driver circuit)

Main Functions of DR board
- CCD drive pulse generation
- Generation of HP pulse for pixel shift timing adjustment
- SHUTTER pulse generation



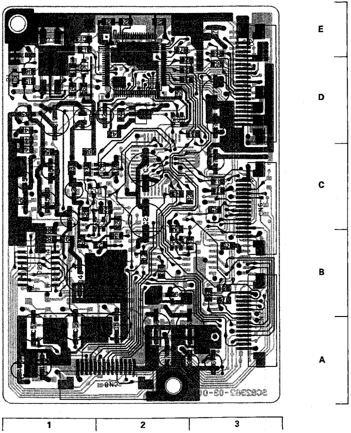
(PR)
CN9
1 GND
2 GND
3 GND
4 DR +5V IN
5 DR +5V IN
6 DR +5V IN
7 HD IN
8 I.BLANKING OUT
9 V.SYNC IN
10 OBCP OUT
11 LOLUX
12 NC
13 SCK2
14 S3
15 NC
16 +19V IN
17 +15V IN
18 NC
19 -9V IN
20 -9V IN
SSV1321-020
CLUMP PULSE FOR C.D.S
SAMPLE & HOLD PULSE FOR C.D.S
H. DRIVE PULSE FOR G-ch
H. DRIVE PULSE FOR B-ch
H. DRIVE PULSE FOR R-ch
H DRIVE PULSE
FOR C.D.S
FOR RESET PULSE
1/2 COUNT DOWN
RESET PULSE FOR F.D.A
UPD6328AGK-BE9
SSG
SSG (TIMING PULSE GEN)
EXT (MASTER) IN
PHASE COMP.
COUNT DOWN TO MAKE HD PULSE
V DRIVE PULSE
SHUTTER PULSE
MASTER CLOCK
HALF PITCH PULSE FOR SPATIAL OFFSET
SHUTTER COMMAND INPUT
SHUTTER PULSE DRIVER
VR1 Eoo
VR2 SHP
VR3 CP
VR4 HP
VR5 B Vsub
VR6 G Vsub
VR7 R Vsub
X1
IC3 UPD16501GS-T2
IC4 UPD16501GS-T2
IC5 UPD16501GS-T2
V. DRIVER
(ISB)
CN6
1 +15V OUT
2 ØR
3 B Vsub
4 V1
5 V2
6 V3
7 V4
8 ØH1B
9 ØH2B
10 ØH2L
11 SHP
12 CP
13
14 GND
TO ISB
(ISG)
CN7
1 +15V OUT
2 ØR
3 G Vsub
4 V1
5 V2
6 V3
7 V4
8 ØH1G
9 ØH2G
10 ØH2L
11 SHP
12 CP
13 HP
14 GND
TO ISG
(ISR)
CN8
1 +15V OUT
2 ØR
3 R Vsub
4 V1
5 V2
6 V3
7 V4
8 ØH1R
9 ØH2R
10 ØH2L
11 SHP
12 CP
13
14 GND
TO ISR
1221

	R15	R23	R24	R25	R28	C15	60	C61				X1
NTSC	*	*	0	*	*	*	*	*				25.42657MHz

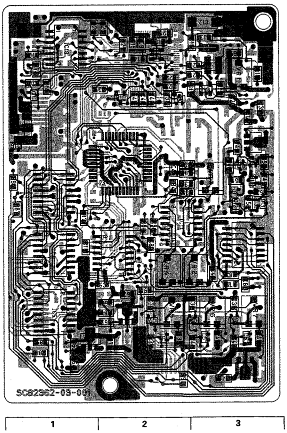
* : OPEN

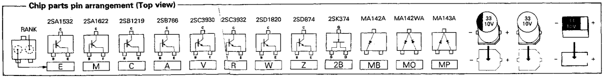
5.12P P. DR CIRCUIT BOARD [PAL]

— Component Side (A) —

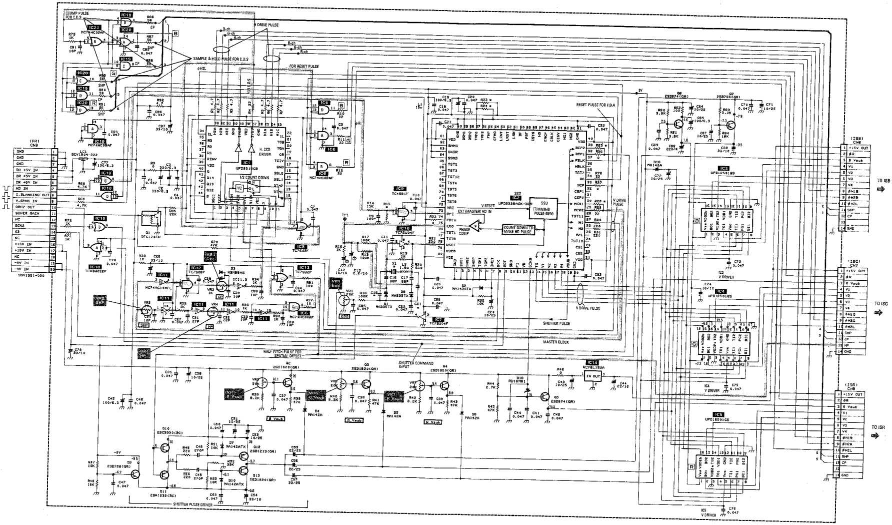

E
D
C
B
A
1
2
3
SC82962-03-00

— Soldered Side (B) —


1
2
3
SC82962-03-00


Chip parts pin arrangement (Top view)
RANK
2SA1532
2SA1622
2SB1219
2SB766
2SC3930
2SC3932
2SD1820
2SD874
2SK374
MA142A
MA142WA
MA143A
C
B
E
G
S
D
E
M
C
A
V
R
W
Z
2B
MB
MO
MP
33 10V
33 10V
-
+

5.13P P. DR BOARD SCHEMATIC DIAGRAM [PAL] 5 1 P



(PR) CN9
GND
GND
GND
DR +5V IN
DR +5V IN
DR +5V IN
HD IN
I.BLANKING OUT
V.SYNC IN
OBCP OUT
SUPER GAIN
NC
SCK2
S3
NC
+15V IN
+15V IN
NC
-9V IN
-9V IN
CLUMP PULSE FOR C.D.S
SAMPLE & HOLD PULSE FOR C.D.S
FOR RESET PULSE
H DRIVE PULSE
H. CCD DRIVER
1/2 COUNT DOWN
UPD6326AGK-B89
SSG (TIMMING PULSE GEN)
EXT (MASTER) HD IN
V RESET
PHASE COMP
COUNT DOWN TO MAKE HD PULSE
RESET PULSE FOR F.D.A
V DRIVE PULSE
SHUTTER PULSE
MASTER CLOCK
HALF PITCH PULSE FOR SPATIAL OFFSET
SHUTTER COMMAND INPUT
SHUTTER PULSE DRIVER
VR1 Eoo
VR2 SHP
VR3 CP
VR4 HP
VR5 B Vsub
VR6 G Vsub
VR7 R Vsub
B Vsub
G Vsub
R Vsub
(ISB) CN6
(ISG) CN7
(ISR) CN8
+15V OUT
V DRIVER
UPD16501GS
TO ISB
TO ISG
TO ISR

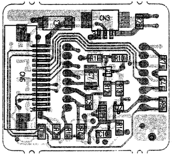
	R15	R23	R24	R25	R28	C15	C61					X1
PAL	-	0	-	-	-	-	-					25.75000MHz

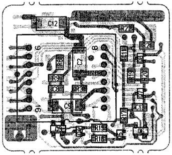
5.14 ISB/ISG/ISR CIRCUIT BOARDS

— Component Side (A) —

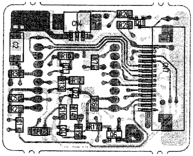
— Soldered Side (B) —

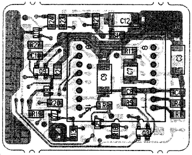
— ISB BOARD —


CN3
C3
CN6
R11
R10
C7
R7
C4
R8
C10

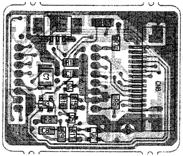

C12
R22
R21
R8
C2
R9
C8
R3
C9
C11
C13
R15
R16

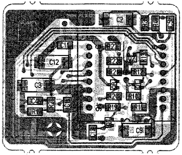
— ISG BOARD —


CN4
R26
R25
C2
R16
R3
R12
C5
R2
R17
Q6
CN7


C12
R22
R11
C3
C9
C7
C8
R5
C4
R4
R20
R19
R6
Q9
Q3

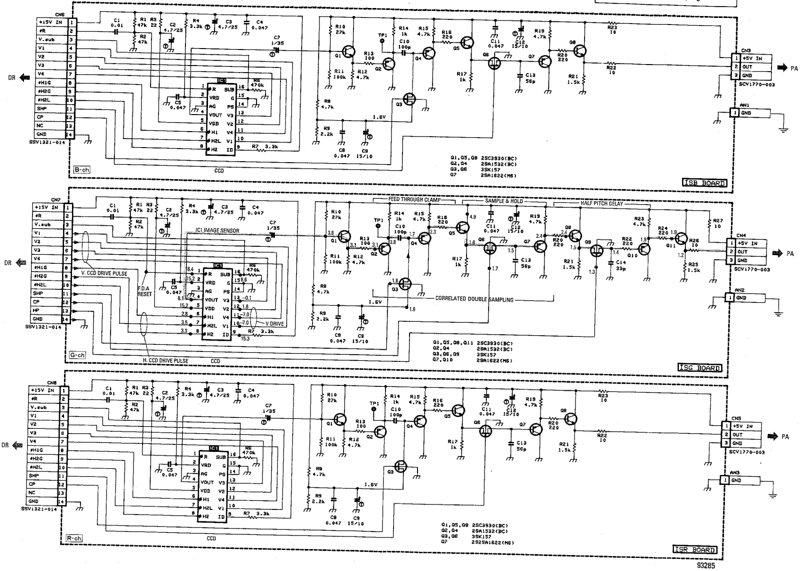
— ISR BOARD —


C3
R1
CN8
R8
C8
R9


C2
C11
C12
R22
C3
R20
R19
R10
C9

5.15 ISB/ISG/ISR BOARD SCHEMATIC DIAGRAM 52/53/54
(Image Sensor board)

Main Functions of ISB, ISG, ISR boards
- To mount CCD image sensor
- Correlative double sampling



CN6
+15V IN
φR
V.sub
V1
V2
V3
V4
φH1G
φH2G
φH2L
SHP
CP
NC
GND
SSV1321-014
DR
IC1
CCD
C1 0.01
R1 47k
R3 22
R2 47k
C2 4.7/25
R4 3.3k
C3 4.7/25
C4 0.047
C5 0.047
C7 1/35
R6 470k
R7 3.3k
R10 27k
R11 100k
R12 4.7k
R13 100
R14 1k
R15 4.7k
R16 220
R17 1k
R8 4.7k
R9 2.2k
C8 0.047
C9 15/10
C10 100p
C11 0.047
C12 15/10
C13 56p
R19 4.7k
R20 220
R21 1.5k
R22 10
R23 10
TP1
1.6V
CN3
+5V IN
OUT
GND
SCV1770-003
PA
AN1
GND
B-ch
Q1,Q5,Q8 2SC3930(BC)
Q2,Q4 2SA1532(BC)
Q3,Q6 3SK157
Q7 2SA1622(M6)
ISB BOARD
CN7
HP
IC1 IMAGE SENSOR
V. CCD DRIVE PULSE
F.D.A RESET
V DRIVE
H. CCD DRIVE PULSE
FEED THROUGH CLAMP
SAMPLE & HOLD
HALF PITCH DELAY
CORRELATED DOUBLE SAMPLING
C14 33p
R24 220
R25 1.5k
R26 10
R27 10
CN4
AN2
G-ch
Q1,Q5,Q8,Q11 2SC3930(BC)
Q2,Q4 2SA1532(BC)
Q3,Q6,Q9 3SK157
Q7,Q10 2SA1622(M6)
ISG BOARD
CN8
CN5
AN3
R-ch
Q1,Q5,Q8 2SC3930(BC)
Q2,Q4 2SA1532(BC)
Q3,Q6 3SK157
Q7 2S2SA1622(M6)
ISR BOARD
93285

5.16 PA CIRCUIT BOARD

● ADDRESS TABLE OF BOARD PARTS

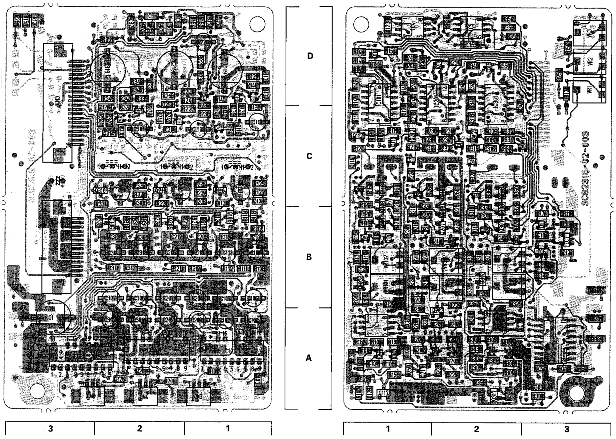
Each address may have an address error by one interval.

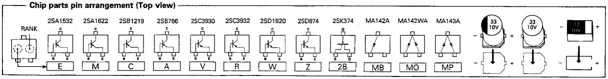
A-1C
Side —┘ │ └— Y axis
└— X axis

IC1	B-1A	R125	A-1C	R310	B-2B	C201	B-2A
IC2	B-2A	R126	A-1B	R311	A-2B	C202	A-2A
IC3	B-3A	R127	B-1B	R312	A-2B	C203	B-2A
IC4	B-1D	R128	B-1C	R314	B-2B	C204	A-1B
IC5	B-2D	R129	B-1B	R315	B-2B	C205	B-1B
IC6	B-3B	R130	B-1B	R316	A-2B	C206	A-1A
IC7	B-3B	R131	A-1C	R317	A-2B	C207	A-2B
IC101	B-1D	R132	B-1C	R318	A-2B	C208	A-1C
IC201	B-2D	R133	B-1C	R319	B-2B	C209	A-1B
IC301	B-2D	R134	A-1C	R320	B-2B	C210	A-1B
		R135	A-1C	R321	B-2C	C211	A-2B
Q101	B-1A	R136	A-1C	R322	A-2C	C212	A-2B
Q102	B-1A	R137	A-1D	R324	B-2C	C213	A-2C
Q103	B-1B	R138	A-1D	R325	A-2C	C214	A-2C
Q104	B-1B	R139	A-1D	R326	A-2B	C215	B-1C
Q105	B-1B	R140	A-1D	R327	B-2B	C216	B-1C
Q106	A-1B	R141	A-1C	R328	B-2C	C217	A-1C
Q107	B-1B	R142	A-1C	R329	B-2B	C218	B-1C
Q108	B-1C	R143	B-1D	R330	B-2B	C219	A-2D
Q109	B-1C	R144	B-1D	R331	A-2C	C220	A-1D
Q110	A-1C	R145	A-1D	R332	B-2C	C221	A-1D
Q111	B-1C	R146	B-1D	R333	B-2C	C222	A-1D
Q112	B-1C	R147	B-1D	R334	B-2C	C225	B-2A
Q113	A-1C	R148	B-1D	R335	B-2C	C226	B-2A
Q114	A-1D	R149	B-1D	R336	B-2C	C227	B-1B
Q115	A-1D	R150	B-1D	R337	A-2C	C228	A-2D
Q116	B-1D	R151	A-1D	R338	A-2C	C229	B-2B
Q117	B-1A	R152	A-1D	R339	A-2D	C230	B-1A
Q118	B-1C	R153	A-1D	R340	A-2D	C301	B-2A
Q201	B-2A	R154	A-1D	R341	A-2C	C302	A-2A
Q202	B-2A	R157	B-3D	R342	A-2C	C303	B-3A
Q203	B-2A	R158	A-3D	R343	B-2D	C304	A-2A
Q204	B-2B	R159	B-1A	R344	B-2D	C305	B-2A
Q205	B-1B	R160	B-1C	R345	A-2D	C306	A-2B
Q206	A-2B	R161	B-1C	R346	A-2D	C307	A-2B
Q207	B-2B	R162	B-1A	R347	B-3D	C308	A-2C
Q208	B-2B	R201	A-2A	R348	A-2D	C309	A-2B
Q209	B-1C	R202	B-1A	R349	B-2D	C310	A-2B
Q210	A-2C	R203	B-2A	R350	B-2D	C311	A-2B
Q211	B-1C	R204	B-1A	R351	A-2D	C312	A-2B
Q212	B-1C	R205	B-2A	R352	B-2D	C313	A-2C
Q213	B-2C	R206	B-2A	R353	B-2D	C314	A-2C
Q214	A-2C	R207	B-1A	R354	B-2D	C315	B-2C
Q215	A-1D	R208	A-2A	R359	B-2A	C316	B-2C
Q216	B-2D	R209	B-1B	R360	B-2C	C317	A-2C
Q217	B-1A	R210	B-1B	R361	B-2C	C318	B-2C
Q218	B-2C	R211	A-2B	R362	B-2B	C319	A-2D
Q301	B-2A	R212	A-1B			C320	A-2D
Q302	B-2A	R214	B-2B	VR1	B-3D	C322	A-2D
Q303	B-2B	R215	B-1B	VR2	B-3D	C323	A-2D
Q304	B-2B	R216	A-1B	VR3	B-3D	C325	A-2A
Q305	B-2B	R217	A-1B	VR101	B-1B	C326	B-2A
Q306	A-2B	R218	A-2B	VR102	B-1B	C327	B-2B
Q307	B-2B	R219	B-1B	VR201	B-2B	C328	A-2D
Q308	B-2C	R220	B-1B	VR202	B-2B	C329	B-2B
Q309	B-2C	R221	B-1C	VR301	B-2B	C330	B-2A
Q310	A-2C	R222	A-1C	VR302	B-2B		
Q311	B-2C	R223	A-1C			TP101	B-3B
Q312	B-2C	R224	B-1C	C1	A-3A	TP201	B-3A
Q313	B-3C	R225	A-1C	C4	B-3A	TP301	B-3A
Q314	A-2C	R226	A-2B	C5	B-3A		
Q315	A-2C	R227	B-2B	C6	B-1A	CN3	A-1A
Q316	B-2D	R228	B-2B	C7	B-3A	CN4	A-2A
Q317	B-2A	R229	B-1B	C8	A-2D	CN5	A-3A
Q318	B-2C	R230	B-1B	C9	A-2D	CN10	A-3D
		R231	A-2C	C10	B-3B	CN11	A-3B
D1	B-3B	R232	B-2C	C11	B-3B		
		R233	B-1C	C12	B-3B	LC101	A-1A
R1	A-2D	R234	B-2C	C13	B-3B	LC102	A-1C
R2	A-2D	R235	B-2C	C14	B-3B	LC201	A-2A
R3	B-2D	R236	B-2C	C15	B-2D	LC202	A-2C
R4	A-2D	R237	A-1D	C16	A-3C	LC301	A-3A
R5	A-2D	R238	A-1C	C101	B-1A	LC302	A-2C
R6	B-3A	R239	A-1D	C102	A-1A		
R7	B-3B	R240	A-1D	C103	B-1A		
R11	B-3B	R241	A-2C	C104	A-1A		
R12	B-3D	R242	A-2C	C105	A-1A		
R13	A-3D	R243	B-1D	C106	A-1B		
R101	A-1A	R244	B-1D	C107	A-1B		
R102	B-1A	R245	A-2D	C108	A-1C		
R103	B-1A	R246	B-1D	C109	A-1B		
R104	B-1A	R247	B-2D	C110	A-1B		
R105	B-1A	R248	B-1D	C111	A-1B		
R106	B-1A	R249	B-1D	C112	A-1B		
R107	B-1A	R250	B-2D	C113	A-1C		
R108	A-1B	R257	B-3D	C114	B-1C		
R109	B-1B	R258	A-3D	C115	B-1C		
R110	B-1B	R259	B-1A	C116	A-1C		
R111	A-1B	R260	B-2C	C117	A-1C		
R112	A-1B	R261	B-1C	C118	B-1C		
R114	B-1B	R262	B-1A	C119	A-1D		
R115	B-1B	R301	B-3A	C120	A-1D		
R116	A-1B	R302	B-2A	C122	B-1D		
R117	A-1B	R303	B-2A	C123	B-1D		
R118	A-1B	R304	B-2A	C125	B-1A		
R119	B-1B	R305	B-2A	C126	B-1A		
R120	B-1B	R306	B-2A	C127	B-1B		
R121	B-1C	R307	B-2A	C128	B-1C		
R122	A-1C	R308	B-2A	C129	B-1B		
R124	B-1C	R309	B-2B	C130	B-1A		

— Component Side (A) —

— Soldered Side (B) —



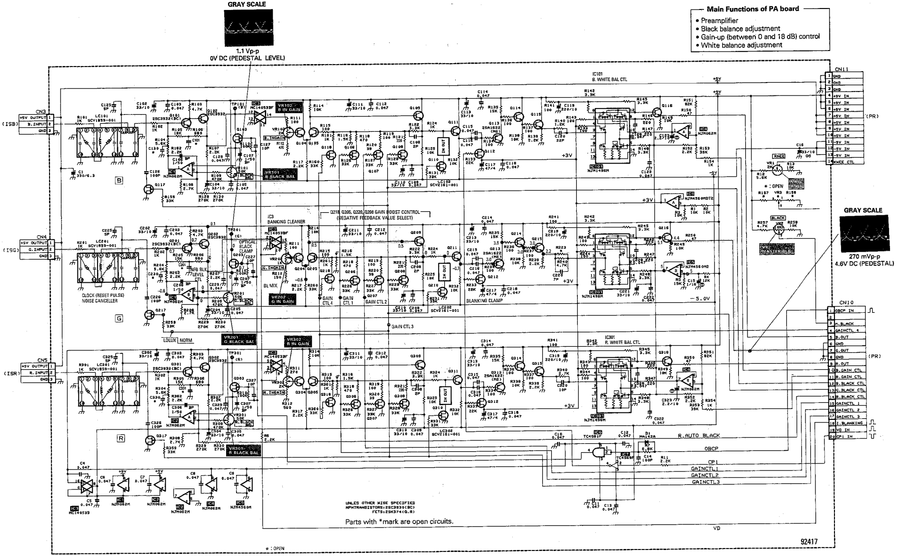

Chip parts pin arrangement (Top view)

5.17 PA BOARD SCHEMATIC DIAGRAM 5 5

(Pre Amplifier board)

Main Functions of PA board

- Preamplifier
- Black balance adjustment
- Gain-up (between 0 and 18 dB) control
- White balance adjustment



GRAY SCALE
1.1 Vp-p
0V DC (PEDESTAL LEVEL)
GRAY SCALE
270 mVp-p
4.6V DC (PEDESTAL)
CN3
+5V OUTPUT
B. INPUT
GND
(ISB)
CN4
G. INPUT
(ISG)
CN5
R. INPUT
(ISR)
LC101 SCV1859-001
LC201 SCV1859-001
LC301 SCV1859-001
CLOCK (RESET PULSE) NOISE CANCELLER
IC101 B. WHITE BAL CTL
IC301 R. WHITE BAL CTL
IC3 BANKING CLEANER
Q218, Q206, Q220, Q208 GAIN BOOST CONTROL (NEGATIVE FEEDBACK VALUE SELECT)
VR102 B IN GAIN
VR101 B BLACK BAL
VR202 G IN GAIN
VR201 G BLACK BAL
VR302 R IN GAIN
VR301 R BLACK BAL
B. INGAIN
G. INGAIN
R. INGAIN
OPTICAL BLACK CLAMP
NFB BLK LEVEL CTL
BL MIX
GAIN CTL4
GAIN CTL1
GAIN CTL2
GAIN CTL3
BLANKING CLAMP
LOLUX NORM
IN OUT
MC14053BF
NJM062M
NJM1496M
NJM4560M
NJM4560MDT2
2SC3932(BC)
2SA1622(MB)
SCV2161-001
TC4S01F
TC4S69F
MA142A
MC14053B
KNEE
MASTER BLK
BLACK
VR1
VR2
VR3
*: OPEN
+3V
+5V
-5V
-5.0V
CN11
GND
+5V IN
-5V IN
KNEE CTL
(PR)
CN10
OBCP IN
H. BLANK
GAINCTL 4
B. OUT
GND
G. OUT
R. OUT
B. GAIN CTL
R. GAIN CTL
B. BLACK CTL
G. BLACK CTL
R. BLACK CTL
GAINCTL 1
GAINCTL 2
GAINCTL 3
I. BLANKING
VD IN
CP1 IN
R. AUTO BLACK
OBCP
CP1
GAINCTL1
GAINCTL2
GAINCTL3
VD
UNLES OTHER WISE SPECIFIED
NPNTRANSISTORS: 2SC3930(BC)
FETS: 2SK374(Q.R)
B
G
R
92417
*: OPEN

Parts with *mark are open circuits.

5.18 PR CIRCUIT BOARD

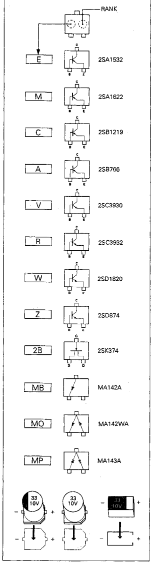
● ADDRESS TABLE OF BOARD PARTS

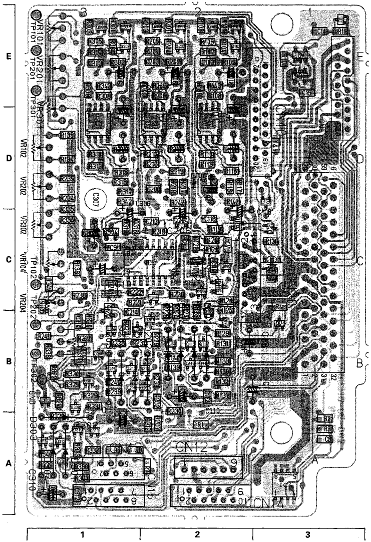
Each address may have an address error by one interval.

A-1C
Side — Y axis
X axis

IC1	B-2D
IC2	B-2D
IC3	B-3D
IC4	B-1A
IC5	B-2C
IC6	B-1E
IC7	B-1E
IC8	B-1C
Q2	B-1B
Q101	B-2E
Q102	B-2E
Q103	B-2E
Q104	B-2C
Q105	B-2C
Q106	B-2C
Q107	B-2B
Q108	B-2C
Q109	B-2B
Q110	B-2B
Q111	B-2B
Q113	B-2B
Q114	B-2B
Q115	B-2C
Q201	B-2E
Q202	B-2E
Q203	B-2E
Q204	B-2C
Q205	B-3B
Q206	B-2C
Q207	B-2B
Q208	B-3B
Q209	B-2B
Q210	B-3B
Q211	B-2B
Q213	B-3B
Q214	B-3B
Q215	B-3C
Q301	B-3E
Q302	B-3E
Q303	B-3E
Q304	B-3C
Q305	B-3B
Q306	B-3B
Q307	B-3B
Q308	B-3B
Q309	B-3A
Q310	B-3A
Q311	B-3A
Q313	B-3A
Q314	B-3A
Q315	B-3C
D1	B-1E
D2	B-1C
D3	B-1D
D101	A-2B
D102	A-2B
D103	A-2B
D104	A-2B
D201	A-3B
D202	A-2B
D203	A-3B
D204	A-3B
D301	A-3A
D302	A-3A
D303	A-3A
D304	A-3A
R1	B-2A
R2	B-1A
R3	B-1A
R4	B-1C
R5	B-3A
R6	B-3A
R7	B-2A
R10	B-1E
R11	B-1E
R12	B-1C
R101	B-2E
R102	B-2E
R103	B-2E
R104	B-2E
R105	B-2E
R106	B-2E
R107	B-2E
R108	B-2E
R109	B-2E
R110	B-2D
R111	B-2D
R113	B-2D
R115	B-2D
R117	B-2D
R118	B-2D
R119	B-2C
R120	B-2C
R121	B-2C
R122	B-2C
R124	B-2C
R125	B-2C
R127	B-2B
R128	B-2B
R129	B-2B
R130	B-2B
R131	B-2B
R132	B-2B
R133	B-2B
R134	B-3D
R135	B-3D
R137	B-2B
R138	B-3C
R139	B-2B
R140	B-2B
R141	B-1D
R142	B-2D
R143	B-2E
R201	B-2E
R202	B-2E
R203	B-2E
R204	B-2E
R205	B-2E
R206	B-2E
R207	B-2E
R208	B-2E
R209	B-2E
R210	B-2D
R211	B-2D
R213	B-2D
R215	B-2D
R217	B-2D
R218	B-2D
R219	B-2C
R220	B-2C
R221	B-3C
R222	B-3C
R224	B-2B
R225	B-2B
R227	B-3B
R228	B-3B
R229	B-2B
R230	B-2B
R231	B-3B
R232	B-2B
R233	B-2B
R234	B-3D
R235	B-3D
R237	B-2A
R238	B-3C
R239	B-3B
R240	B-3B
R241	B-3B
R242	B-2D
R243	B-2E
R301	B-3E
R302	B-3E
R303	B-3E
R304	B-3E
R305	B-3E
R306	B-3E
R307	B-3E
R308	B-3E
R309	B-3E
R310	B-3D
R311	B-3D
R313	B-3D
R315	B-3D
R317	B-3D
R318	B-3D
R319	B-3C
R320	B-3B
R321	B-3B
R322	B-3B
R324	B-3B
R325	B-3B
R327	B-3B
R328	B-3A
R329	B-3B
R330	B-3A
R331	B-3B
R332	B-3A
R333	B-3A
R334	B-3C
R335	B-3D
R337	B-3A
R338	B-3B
R339	B-3A
R340	B-3A
R341	B-3C
R342	B-3D
R343	B-3E
VR101	A-3E
VR102	A-3D
VR104	A-3C
VR201	A-3E
VR202	A-3D
VR204	A-3B
VR301	A-3D
VR302	A-3C
VR304	A-3B
C1	A-2B
C3	B-1A
C4	B-2D
C5	B-2D
C6	B-3D
C7	B-2C
C8	B-2C
C9	B-3C
C10	A-3C
C13	A-2B
C14	B-1E
C15	B-1E
C101	A-2D
C103	B-2E
C104	A-2D
C105	A-2E
C106	A-2C
C107	A-2D
C108	B-2D
C110	A-2B
C111	B-2B
C112	B-2B
C113	B-2C
C114	B-2C
C201	A-2D
C203	B-2E
C204	A-2D
C205	A-2E
C206	A-2C
C208	B-2D
C210	A-3A
C211	B-3A
C212	B-2A
C213	B-2C
C214	B-3B
C301	A-3D
C303	B-3E
C304	A-3D
C305	A-3E
C306	A-3C
C307	A-3C
C308	B-3C
C310	A-3A
C311	B-3A
C312	B-3A
C313	B-3C
C314	B-3B
L101	B-2C
L201	B-3C
L301	B-3B
TP1	A-3B
TP101	A-3E
TP102	A-3C
TP201	A-3E
TP202	A-3B
TP301	A-3E
TP302	A-3B
CN9	A-1D
CN10	A-1E
CN11	A-1C
CN12	A-2A
CN13	A-3A
CN14	A-2A
CN15	A-3A
CN20	A-1B

Chip parts pin arrangement (Top view)

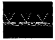

RANK
E
2SA1532
M
2SA1622
C
2SB1219
A
2SB766
V
2SC3930
R
2SC3932
W
2SD1820
Z
2SD874
2B
2SK374
MB
MA142A
MO
MA142WA
MP
MA143A
33
10V
-
+


E
D
C
B
A
1
2
3
VR101
TP101
VR201
TP201
TP301
VR301
VR102
VR202
VR302
VR104
TP102
VR204
TP202
TP302
GND
D303
C310
C307
CN10
CN12
CN13
CN14
CN15

5.19 PR BOARD SCHEMATIC DIAGRAM 5 6

(video PRocess board)

GRAY SCALE

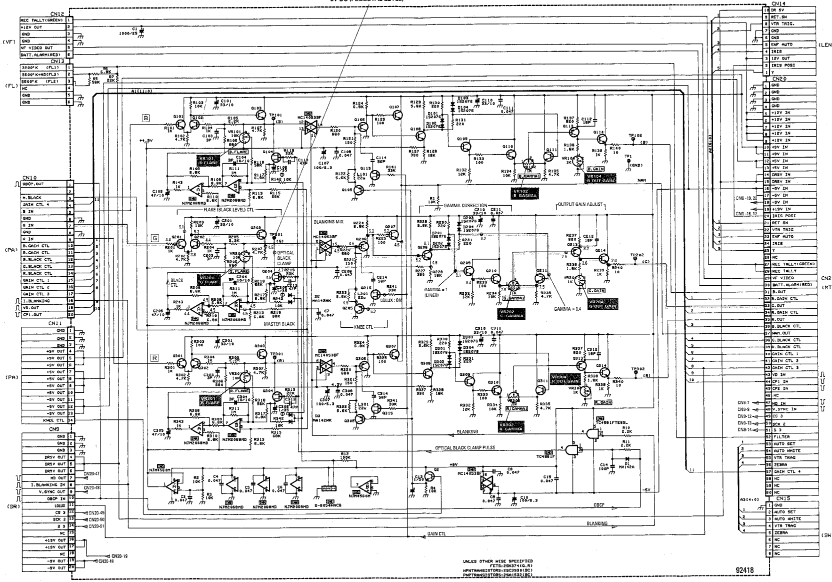


1.2 Vp-p

5V DC (PEDESTAL LEVEL)

Main Functions of PR board

- Flare correction
- Knee compression
- Gamma correction
- Output gain (R, G, B) adjustment



CN12
REC TALLY(GREEN)
+12V OUT
GND
VF VIDEO OUT
BATT.ALARM(RED)
(VF)
CN13
3200°K (FL1)
5600°K+ND(FL3)
5600°K (FL2)
NC
(FL)
CN10
OBCP.OUT
M.BLACK
GAIN CTL 4
B IN
G IN
R IN
B.GAIN CTL
R.GAIN CTL
B.BLACK CTL
G.BLACK CTL
R.BLACK CTL
GAIN CTL 1
GAIN CTL 2
GAIN CTL 3
I.BLANKING
VD.OUT
CP1.OUT
(PA)
CN11
+9V OUT
+5V OUT
-5V OUT
KNEE CTL
CN9
DRSV OUT
HD OUT
I.BLANKING IN
V.SYNC OUT
OBCP IN
LOLUX
CS 3
SCK 2
S 3
+19V OUT
-9V OUT
(DR)
CN14
DR 5V
RET.SW
VTR TRIG.
ENF AUTO
IRIS
12V OUT
IRIS POSI
(LENS)
CN20
(MT)
+12V IN
+9V IN
+5V IN
DRSV IN
-5V IN
-9V IN
+19V IN
RET SW
VTR TRIG
ENF AUTO
REC TALLY(GREEN)
REC TALLY
VF VIDEO
BATT.ALARM(RED)
B.OUT
B.GAIN CTL
G.OUT
R.GAIN CTL
R.OUT
B.BLACK CTL
NAM.OUT
G.BLACK CTL
R.BLACK CTL
GAIN CTL 1
GAIN CTL 2
GAIN CTL 3
VD IN
CP1 IN
CP2 IN
HD IN
V.SYNC IN
CS 3
SCK 2
S 3
FILTER
AUTO SET
AUTO WHITE
VTR TRAG
ZEBRA
GAIN CTL 4
CN15
(SW1)
B
G
R
VR101 B.FLARE
VR201 G.FLARE
VR301 R.FLARE
VR102 B.GAMMA
VR202 G.GAMMA
VR302 R.GAMMA
VR104 B.OUT GAIN
VR204 G.OUT GAIN
VR304 R.OUT GAIN
FLARE (BLACK LEVEL) CTL
BLACK CTL
MASTER BLACK
OPTICAL BLACK CLAMP
BLANKING MIX
KNEE CTL
LOLUX : ON
GAMMA CORRECTION
GAMMA = 1 (LINER)
GAMMA = 0.4
OUTPUT GAIN ADJUST
NJM2068MD
MC14053BF
MA142WK
TC4S81FTE85L
TC4S81F
NJM4560M
S-8054HNCB
BLANKING
OPTICAL BLACK CLAMP PULSE
OBCP
GAIN CTL
TP101 (B)
TP201 (G)
TP301 (R)
TP102 (B)
TP202 (G)
TP302 (R)
NAM
UNLES OTHER WISE SPECIFIED
FETS:2SK374(Q,R)
NPNTRANSISTORS:2SC3930(BC)
PNPTRANSISTORS:2SA1532(BC)
92418

5.20 CC CIRCUIT BOARD

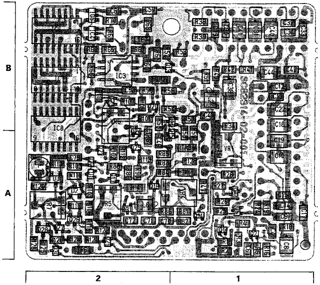
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

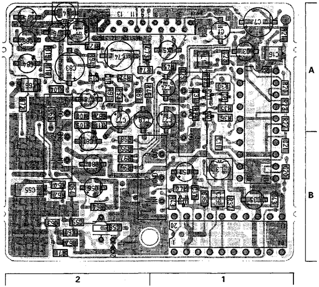
A-1C
Side — A; Y axis — C; X axis — 1

Part	Address
IC1	A-1A
IC2	A-1B
IC3	B-2B
IC4	B-2B
IC5	B-2B
IC6	B-2B
IC7	B-2B
IC8	B-2B
Q1	B-1A
Q2	B-1A
Q5	B-1A
Q6	B-1A
Q7	A-1A
Q8	A-1A
Q9	A-1A
Q10	A-1B
Q11	B-1A
Q13	B-2B
Q14	B-1B
Q15	B-1A
Q16	B-2A
Q17	B 2A
Q18	A-2A
Q19	A-2A
Q20	B-2B
Q21	B-2A
Q22	B-2A
Q23	B-2B
Q24	B-2A
Q25	B-2A
Q26	B-2A
Q27	B-2A
Q28	B-2A
Q29	B-2A
Q30	B-2A
Q31	B-2A
D1	B-2A
D2	B-2A
D3	B-2A
D4	A-2B
R1	B-1A
R2	B-1A
R3	B-1A
R4	B-1A
R6	B-1A
R16	B-1A
R18	B-1A
R19	B-1A
R20	A-1A
R21	A-1A
R22	A-1A
R23	A-1A
R24	B-1A
R25	B-1A
R26	B-1A
R27	B-1A
R28	B-1A
R29	A-1A
R30	A-1A
R31	A-1A
R32	A-1A
R34	B-1B
R35	A-1A
R36	A-1A
R37	A-1B
R38	B-1B
R39	B-1B
R40	B-1B
R41	B-1B
R42	B-1B
R43	A-1B
R44	A-1B
R45	A-1A
R46	A-1A
R47	B-1A
R51	B-1B
R52	B-2B
R53	B-1B
R54	B-2B
R55	B-2B
R56	B-2B
R57	B-1B
R58	B-1A
R59	B-1A
R60	B-2B
R61	B-2B
R62	A-2B
R63	B-2B
R64	A-2B
R65	B-2B
R66	B-2B
R67	B-2B
R68	B-2B
R69	B-2B
R70	B-2B
R71	A-2B
R72	A-2A
R74	A-2A
R81	B-1A
R82	B-1A
R83	B-2A
R84	B-2A
R85	B-2A
R86	B-2A
R87	A-2A
R88	B-2A
R89	B-2A
R90	B-2A
R91	A-2A
R92	A-2A
R93	A-2A
R94	A-2A
R95	A-2B
R96	A-2B
R97	A-2B
R98	A-2B
R99	B-2B
R100	A-2A
R101	B-2B
R102	B-2A
R103	B-2A
R104	A-2A
R105	B-2A
R106	B-2A
R107	B-2B
R108	B-2B
R109	A-2A
R110	B-2B
R111	A-2A
R112	B-2A
R113	B-2A
R114	B-2A
R115	A-2A
R116	A-2A
R117	B-2A
R118	B-2A
R119	B-2A
R120	B-2A
R121	B-2A
R122	B-2A
R123	B-2A
R124	B-2A
R125	B-2A
R126	B-2A
R127	A-2A
R128	B-1A
VR1	B-1A
VR4	B-1A
VR5	B-2A
VR6	B-2B
VR7	B-2A
C1	A-1A
C3	A-1A
C4	B-1A
C7	A-1A
C8	B-1A
C9	B-1A
C10	B-1A
C11	A-1B
C12	B-1B
C13	B-1B
C14	B-1A
C15	B-1A
C16	A-1A
C17	B-1A
C18	B-1B
C19	B-1A
C20	A-1B
C21	A-1B
C22	B-1B
C23	A-1A
C24	A-1A
C25	A-1A
C27	A-1A
C29	A-1B
C30	B-1B
C31	B-1B
C32	B-1B
C33	B-1B
C34	B-1B
C35	A-1B
C36	A-1B
C37	A-1B
C38	B-1B
C39	B-1B
C40	B-1B
C41	B-1B
C42	B-1B
C43	A-1B
C44	B-1B
C45	A-1A
C47	B-1B
C48	A-2A
C49	B-2A
C51	A-1B
C53	B-2B
C54	A-2B
C55	A-2B
C56	A-2B
C57	B-2B
C58	A-2B
C59	A-2B
C60	A-2B
C61	B-2B
C62	A-2B
C63	A-2B
C64	A-2B
C65	A-2A
C66	A-2A
C67	B-1A
C70	B-2A
C71	B-2A
C72	B-2A
C73	A-2A
C74	A-2A
C75	A-2A
C76	A-2A
C77	A-2A
C78	A-2A
C79	B-2A
C80	A-2B
C81	A-2B
C82	A-2A
C83	A-2A
C84	A-2A
C86	A-2A
L1	A-1A
L2	B-1B
L3	A-1B
L4	A-2A
L5	A-2A
L6	B-2A
L7	B-2A
DL1	A-1A
DL2	A-1B
DL3	A-2B
TP1	B-1A
TP2	B-2B
TP3	B-1A
TP4	B-2A
TP5	B-2A
TP6	B-2A
TP7	B-2B
TP8	A-1A
CN31	A-1A
X1	A-2B

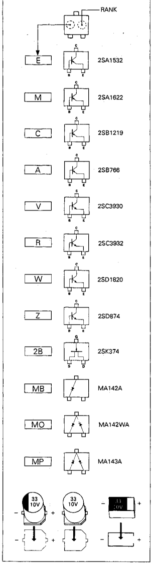
— Soldered Side (B) —



— Component Side (A) —



Chip parts pin arrangement
(Top view)

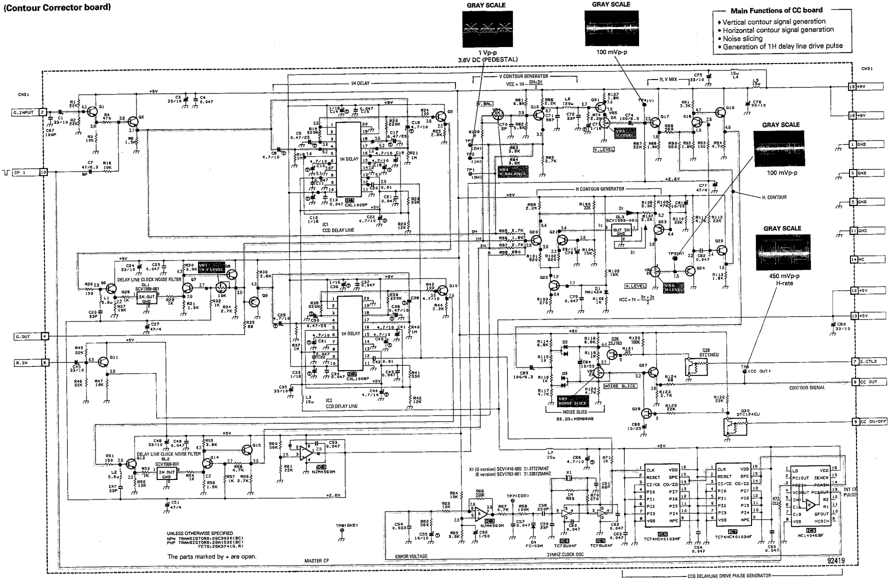


5.21 CC BOARD SCHEMATIC DIAGRAM 07

(Contour Corrector board)

Main Functions of CC board

- Vertical contour signal generation
- Horizontal contour signal generation
- Noise slicing
- Generation of 1H delay line drive pulse



GRAY SCALE
1 Vp-p
3.6V DC (PEDESTAL)
GRAY SCALE
100 mVp-p
GRAY SCALE
100 mVp-p
GRAY SCALE
450 mVp-p
H-rate
CN31
G.INPUT
CP 1
G.OUT
R.IN
1H DELAY
IC1
CCD DELAY LINE
CXL1009P
IC2
CCD DELAY LINE
DELAY LINE CLOCK NOISE FILTER
DL1
SCV1569-001
DL2
VR1
1H Y LEVEL
V CONTOUR GENERATOR
VCC = 1H - (0H+2H)/2
V.BAL
VR4
V BALANCE
VR5
V LEVEL
V.LEVEL
TP1 (0H)
TP2 (1H)
TP3 (2H)
TP4 (V)
H, V MIX
H CONTOUR GENERATOR
DL3
SCV1569-001
H.LEVEL
VR6
H LEVEL
HCC = 1τ - (0τ+2τ)/2
TP5 (H)
H. CONTOUR
NOISE SLICE
VR7
D2, D3 : HSM88AS
Q29
DTC124EU
Q30
DTC124EU
TP6 (CC OUT)
CONTOUR SIGNAL
+9V
GND
NC
+5V
G.CTL2
CC OUT
CC ON/OFF
IC3
NJM4560M
X1 (U version) SCV1416-002 21.47727MHZ
(E version) SCV1762-001 21.328125MHZ
TP7 (EOO)
TP8 (GND)
IC4
TC7SU04F
IC5
TC7SU04F
D4
FC-53M
21MHZ CLOCK OSC
ERROR VOLTAGE
MASTER CP
IC6
TC74HC40103AF
IC7
TC74HC40103AF
IC8
MC14046BF
INT CP PULSE
CCD DELAYLINE DRIVE PULSE GENERATOR
92419
UNLESS OTHERWISE SPECIFIED
NPN TRANSISTORS: 2SC3930(BC)
PNP TRANSISTORS: 2SA1532(BC)
FETS: 2SK374(Q,R)
The parts marked by * are open.

5.22N N. SE CIRCUIT BOARD

A-1C
Side — Y axis — X axis

● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

Part	Address
IC1	B-2D
IC2	B-3B
IC3	B-3C
IC4	B-3D
IC5	B-4C
IC6	B-1C
IC7	B-4D
IC101	B-2D
IC201	B-2D
IC301	B-2C
IC501	B-4E
IC502	B-1E
IC503	A-6C
IC504	B-5D
IC505	B-4D
IC506	A-6D
IC507	A-5A
IC508	B-6E
IC509	B-5E
IC510	B-6D
IC511	A-4F
IC512	A-5F
IC513	A-2F
IC514	A-2F
IC515	B-3F
IC516	B-2E
IC517	B-5F
IC518	A-3E
IC519	A-4D
IC520	A-6D
IC526	A-5B
Q1	B-1C
Q2	A-4C
Q3	A-3C
Q4	A-4B
Q5	A-3D
Q6	B-3E
Q7	A-3C
Q8	A-3D
Q9	A-3E
Q101	A-1D
Q102	A-2E
Q103	A-2E
Q104	B-2D
Q105	B-2D
Q107	B-2E
Q108	B-3E
Q109	B-3D
Q110	A-2D
Q111	A-2D
Q201	A-1D
Q202	A-2D
Q203	B-2D
Q204	B-2D
Q205	B-2D
Q207	B-2C
Q208	B-2C
Q209	B-2C
Q210	A-1D
Q211	A-1D
Q301	A-1C
Q302	A-2D
Q303	A-2D
Q304	B-2C
Q305	B-2C
Q307	B-2C
Q308	B-2C
Q309	B-2C
Q310	B-2C
Q311	B-2C
Q501	B-6D
Q502	B-3F
Q503	B-3F
Q504	B-2E
Q505	B-1F
Q509	B-2E
Q510	B-1F
Q512	A-5F
Q513	A-2E
Q514	A-1E
Q515	A-4A
Q516	A-4A
Q517	A-4A
Q518	B-5A
Q519	A-5A
Q520	A-5A
Q521	A-5A
Q522	B-5B
Q523	B-5B
D1	A-3C
D501	B-4D
D502	A-2E
D503	A-4E
D504	B-4A
D505	A-5E
D506	B-3F
D507	B-4F
R5	B-4C
R6	B-4C
R7	B-4C
R8	B-3C
R9	B-3C
R10	B-3C
R11	B-3C
R12	B-3C
R13	B-3C
R14	A-3C
R15	B-3C
R16	A-3D
R17	B-3D
R20	B-3D
R21	B-3D
R22	B-3D
R23	B-3D
R24	B-3D
R25	B-3D
R26	A-3D
R28	B-4D
R29	A-3C
R30	B-4D
R31	A-4C
R32	B-3D
R33	B-3D
R34	B-3D
R35	B-3D
R36	B-3D
R37	B-3D
R39	B-3D
R45	B-1C
R46	B-1C
R47	B-3B
R48	B-4B
R49	B-5C
R50	A-1C
R51	B-1C
R52	A-3C
R53	A-4B
R54	B-3C
R55	B-3C
R56	B-4B
R57	B-4B
R58	B-4B
R59	A-4C
R60	A-4C
R61	A-4C
R62	A-4C
R63	A-3C
R64	A-3D
R65	A-3D
R66	A-3E
R67	A-3D
R68	B-4D
R69	B-4D
R70	B-4D
R71	B-4C
R73	B-4C
R74	B-4C
R78	B-1C
R79	A-3D
R80	A-3D
R81	A-3E
R82	B-3E
R83	B-3E
R84	B-3E
R101	A-1E
R102	A-1D
R103	A-1D
R104	A-1E
R105	A-1E
R106	A-1E
R107	A-2E
R108	B-1E
R109	B-1D
R110	B-2D
R111	B-2D
R112	B-2E
R113	B-2E
R114	A-2E
R115	B-3E
R116	B-2D
R117	B-3D
R118	A-2D
R119	A-3D
R120	A-3D
R121	B-3D
R122	B-2D
R123	B-2E
R125	A-2D
R127	A-1D
R201	A-1D
R202	A-1D
R203	A-1D
R204	B-1D
R205	A-2D
R206	B-1D
R207	A-2D
R208	B-2D
R209	B-1D
R210	B-2D
R211	B-2D
R212	B-2D
R213	B-2D
R214	A-2D
R215	A-2D
R216	B-2C
R217	B-2C
R218	B-2D
R219	A-2D
R220	B-2C
R221	A-3D
R222	A-3D
R223	B-2D
R225	A-1D
R227	A-1D
R263	A-5E
R264	A-5E
R301	A-1C
R302	A-1C
R303	A-1C
R304	B-1C
R305	A-1C
R306	B-1C
R307	A-2D
R308	A-1C
R309	B-2D
R310	B-2D
R311	B-2C
R312	B-2C
R313	B-2C
R314	B-2C
R315	B-2C
R316	B-2C
R317	B-1C
R318	B-2C
R319	A-3C
R320	B-2C
R321	B-2C
R322	A-3C
R323	B-2D
R325	B-1C
R327	B-2C
R501	B-6C
R502	B-5C
R504	A-5D
R505	B-6D
R507	A-6D
R508	A-6C
R509	B-5D
R510	B-5D
R511	B-4D
R512	A-4D
R513	B-4D
R514	A-4D
R515	A-4D
R516	B-4D
R517	B-4D
R518	B-4D
R519	B-4D
R520	B-5E
R521	B-5D
R522	B-5E
R523	A-5D
R524	B-5F
R525	B-3F
R526	B-3F
R527	B-4F
R528	B-3F
R529	B-3F
R530	A-6E
R532	B-5E
R533	A-5E
R534	B-5E
R535	B-5E
R536	B-5E
R538	B-4F
R539	B-4F
R540	B-4F
R542	B-4F
R543	B-3F
R544	B-2F
R545	B-3F
R546	A-5F
R547	A-5F
R548	A-5F
R549	A-5F
R550	A-5F
R551	B-5F
R552	B-5F
R553	B-3B
R554	B-3B
R555	A-2E
R556	A-2E
R557	A-1E
R558	B-4E
R559	B-5E
R560	A-1E
R562	A-5E
R563	A-5E
R564	A-4E
R565	A-4E
R566	B-5E
R567	B-4F
R568	B-3E
R569	B-3F
R571	B-3F
R572	B-2E
R573	B-1E
R574	A-2F
R575	A-1F
R576	A-2F
R577	A-1F
R578	A-2E
R579	A-2E
R580	A-2F
R581	A-2F
R582	B-2F
R583	B-3F
R586	A-2E
R587	B-2E
R589	B-1F
R594	B-1F
R596	B-1F
R597	B-2E
R598	B-1E
R599	B-1E
R600	A-1F
R601	A-1F
R602	A-2E
R603	A-1E
R604	A-1E
R605	A-2F
R607	A-6D
R608	B-1E
R609	A-1E
R610	A-5F
R611	B-1E
R612	A-1E
R613	B-2E
R614	A-1E
R615	B-1F
R616	A-4E
R617	A-4E
R618	A-5D
R622	B-5A
R623	B-5A
R624	B-5A
R625	B-5A
R626	B-4A
R627	B-5A
R628	A-4D
R630	A-4A
R631	A-4A
R632	A-4A
R633	A-4A
R634	A-4A
R635	A-4A
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R637	A-4A
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R639	B-6A
R640	A-5A
R641	A-4A
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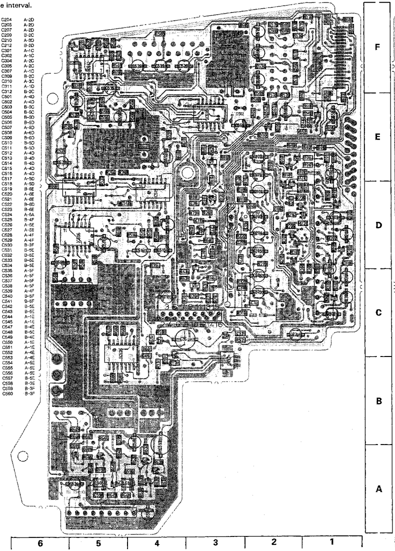
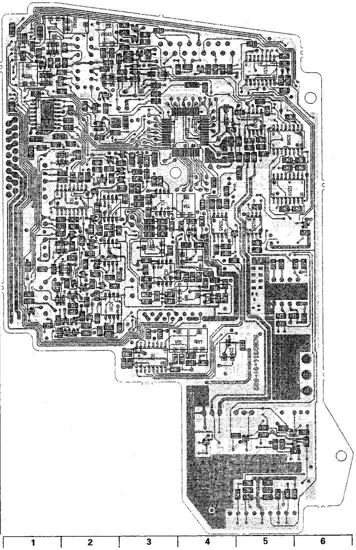
R646	A-5A
R647	A-5B
R648	A-5B
R649	A-5B
R650	B-6B
R651	B-5B
R652	B-5B
R655	A-5F
R656	A-5F
R660	A-5B
R661	A-5B
R662	A-5C
R663	A-5C
R667	B-2E
R668	B-2E
R669	B-2E
VR1	B-4C
VR2	B-3D
VR4	B-4D
VR5	B-4D
VR6	B-4C
VR7	B-4C
VR501	B-1F
VR502	B-2F
VR503	B-2F
VR504	B-1F
VR505	A-4B
VR506	A-4B
C1	B-1C
C2	A-2C
C3	A-2D
C4	A-2D
C5	B-2C
C6	B-2D
C7	A-2C
C8	B-2C
C9	B-3D
C10	B-4C
C11	A-3D
C12	A-3D
C13	B-2D
C14	A-1D
C15	B-3B
C16	B-3B
C17	A-4B
C18	A-4B
C19	A-4C
C20	A-2D
C21	B-4C
C22	B-4D
C23	B-4C
C24	B-4C
C25	B-4C
C26	A-3C
C27	B-4D
C29	B-3C
C30	A-3D
C32	B-3D
C34	B-3D
C35	A-4C
C36	A-4C
C37	A-3C
C38	A-3D
C39	A-3D
C40	B-3E
C41	B-3D
C42	A-3C
C43	A-4C
C44	A-3D
C45	A-3E
C46	A-4B
C101	A-1E
C102	A-1D
C103	A-1D
C104	A-2D
C105	A-2E
C106	A-2D
C107	A-2E
C108	A-2E
C109	A-3D
C110	B-2D
C111	A-1E
C112	B-2E
C201	A-1D
C202	A-1C
C204	A-2D
C205	A-2D
C207	A-2D
C209	B-2C
C210	A-3D
C212	B-2D
C301	A-1C
C302	A-1C
C304	A-2C
C305	A-2C
C307	A-1C
C309	B-2C
C310	A-3C
C311	A-1D
C312	B-2C
C501	A-4D
C502	A-4D
C503	B-5C
C504	B-5C
C505	B-5D
C506	B-5D
C507	A-5D
C508	A-6D
C509	B-6D
C510	B-5D
C511	B-5D
C512	A-4D
C513	B-4D
C514	B-4D
C515	A-4D
C516	A-4D
C517	A-5D
C518	A-5D
C519	B-6E
C520	A-6E
C521	A-6E
C522	B-6D
C523	B-6E
C524	A-5A
C525	B-4F
C526	A-5E
C527	A-5E
C528	A-4F
C529	A-4F
C530	B-3F
C531	B-5E
C532	B-5E
C533	B-5E
C534	B-5E
C535	A-5F
C536	A-5F
C537	A-5F
C538	A-5F
C539	A-4F
C540	B-5F
C541	B-5F
C542	B-5E
C543	B-5E
C544	A-1E
C545	A-1E
C547	B-4E
C548	B-5E
C549	B-4E
C550	A-1E
C551	A-1E
C552	A-4E
C553	A-4E
C554	A-5E
C555	A-5E
C556	A-5E
C557	B-5E
C558	B-3E
C559	B-3F
C560	B-3F
C561	A-3E
C562	A-2E
C563	A-2E
C564	A-2F
C565	B-2F
C566	A-2F
C567	B-2F
C568	B-2F
C569	A-2F
C570	A-2F
C571	B-2F
C572	A-2F
C573	B-2F
C574	A-2F
C575	A-2F
C576	B-1F
C577	A-2F
C578	B-1F
C579	B-1F
C580	A-2F
C581	A-2E
C582	A-2E
C585	A-4F
C586	A-2E
C587	B-5A
C588	B-5A
C589	B-5A
C590	B-5A
C591	A-4A
C592	B-3F
C593	A-4A
C594	B-5A
C595	A-4A
C596	A-4A
C597	A-5A
C598	A-5A
C599	A-5B
C600	A-5A
C601	A-5A
C602	B-5B
C603	B-2E
C607	A-5C
C608	B-4B
VC1	B-3F
VC2	B-4E
L101	B-1E
L102	B-1D
L103	B-2C
L501	B-2F
L502	B-1F
L503	B-1F
L504	A-4A
L505	A-5A
DL1	A-3C
DL101	A-1D
DL201	A-1D
DL301	A-1C
TP1	B-1E
TP2	B-1E
TP3	B-1E
TP4	B-1F
TP5	A-6B
TP6	B-3E
TP7	B-3E
TP8	B-1F
TP9	B-4F
TP10	B-5E
TP11	A-6B
TP12	A-6B
TP13	B-3E
CN29	A-1E
CN30	A-1F
CN31	A-4C
CN32	A-3B
S1	A-6B
S2	B-4C
X1	A-3E
X2	A-4E

— Component Side (A) —

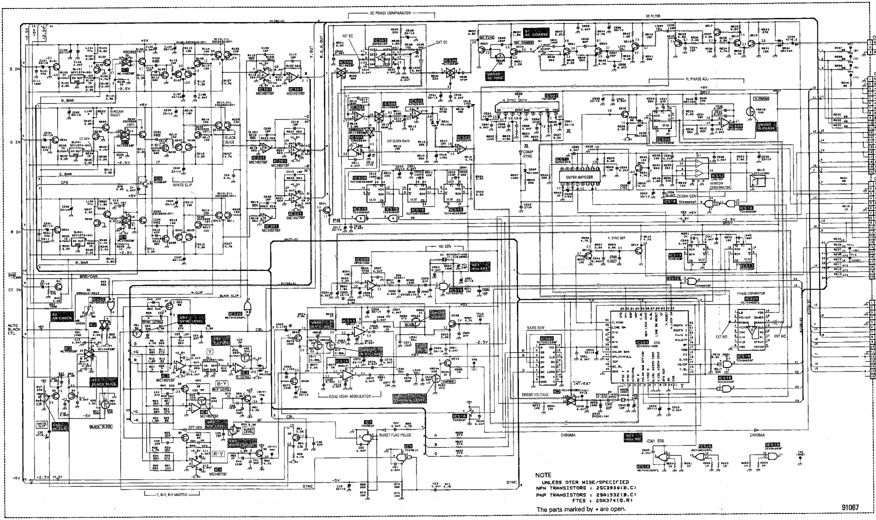


— Soldered Side (B) —



5.23N N. SE BOARD SCHEMATIC DIAGRAM 5 8 N [NTSC]
(Sync signal generator and color Encoder)

Main Functions of SE board
- White clipping
- Black slicing
- Blanking mix
- R-Y/B-Y signal switching
- Y, C signal output
- Sync signal generation
- Genlock


SC PHASE COMPARATOR
SC FILTER
INT SC
EXT SC
SC FINE
SC COARSE
H. PHASE ADJ
H. SYNC SEPA
COMP SYNC
INT CLOCK GAIN
SUPER IMPOSER
WINDOW COMPARATOR
ZEBRA GEN
V SYNC SEP
HD GEN
PHASE COMPARATOR
BARS GEN
ERROR VOLTAGE
INT/EXT
EXT HD
INT HD
B IN
G IN
R IN
BAR/CAM
CC IN
AUTO BLACK CTL
B.BAR
G.BAR
R.BAR
CC MIX
BAR/CAM SELECT
WHITE CLIP
BLACK SLICE
BL.MIX
BLACK CLIP
W.CLIP
SYNC LEVEL
AB CHECK
BURST LEVEL
CHROMA LEVEL
BFF MIX
B-Y
R-Y
B-Y LEVEL
R-Y LEVEL
Y
CBL
BURST FLAG PULSE
IC512, IC514 MODULATOR
Y, B-Y, R-Y MATRIX
CHROMA
SYNC
IC501 SSG
Y.OUT
R.G.B. OUT
CN32
CN29
CN30
CN31
91067

NOTE

UNLESS OTER WISE/SPECIFIED
NPN TRANSISTORS : 2SC3930(B.C)
PNP TRANSISTORS : 2SA1532(B.C)
FTES : 2SK374(Q.R)

The parts marked by * are open.

V15471 / Druck 37

5.22P P. SE CIRCUIT BOARD

N. SE [NTSC] **P. SE** [PAL]

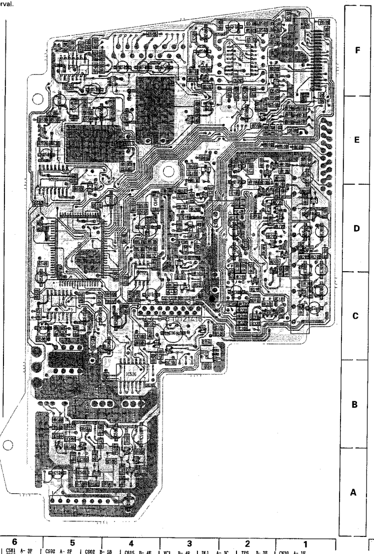
● ADDRESS TABLE OF BOARD PARTS

A-1C
Side
Y axis
X axis

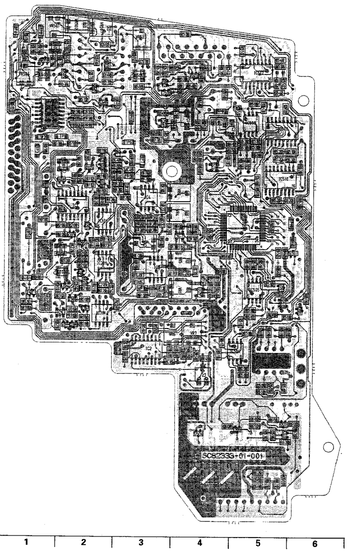
Each address may have an address error by one interval.

IC1	B- 2D
IC2	B- 3B
IC3	B- 3C
IC4	B- 3D
IC5	B- 4C
IC6	B- 1C
IC7	B- 4D
IC101	B- 2D
IC201	B- 2C
IC301	B- 2C
IC501	B- 5D
IC502	A- 5D
IC503	A- 5B
IC504	B- 5B
IC505	B- 5C
IC506	A- 6C
IC507	A- 5A
IC508	B- 6E
IC509	B- 5E
IC510	B- 6D
IC511	A- 4F
IC512	A- 5F
IC513	A- 3F
IC514	A- 2F
IC515	B- 3E
IC516	B- 2E
IC517	B- 5F
IC518	A- 4F
IC519	B- 5C
IC520	A- 6D
IC521	A- 2F
IC522	B- 1E
IC523	A- 4C
IC524	B- 4E
IC525	A- 3E
IC526	A- 4B
Q1	B- 1C
Q2	A- 4C
Q3	A- 3C
Q4	A- 3B
Q5	A- 3D
Q6	B- 2E
Q7	A- 3C
Q8	A- 3D
Q9	A- 3E
Q101	A- 1D
Q102	A- 2E
Q103	A- 2E
Q104	B- 1D
Q105	B- 2E
Q107	B- 2E
Q108	B- 2E
Q109	B- 2D
Q110	A- 2D
Q111	A- 2D
Q201	A- 1D
Q202	A- 2D
Q203	B- 2D
Q204	B- 2D
Q205	B- 2D
Q207	B- 2C
Q208	B- 2C
Q209	A- 2C
Q210	A- 1D
Q211	A- 1D
Q301	A- 1C
Q302	A- 1D
Q303	A- 2C
Q304	B- 2C
Q305	B- 2C
Q307	B- 2C
Q308	A- 2C
Q309	A- 2C
Q310	B- 2C
Q311	B- 2C
Q501	B- 6C
Q502	B- 3F
Q503	B- 4F
Q504	B- 2F
Q505	B- 1F
Q509	A- 3F
Q510	B- 1F
Q512	A- 5F
Q513	A- 2E
Q514	A- 2F
Q515	A- 4A
Q516	A- 4A
Q517	A- 4A
Q518	B- 5A
Q519	A- 5A
Q520	A- 5A
Q521	A- 5A
Q522	B- 5B
Q523	B- 5B
D1	A- 3C
D501	B- 5C
D502	A- 4E
D503	A- 5D
D504	B- 4A
D505	A- 6B
D506	B- 3B
D507	B- 6D
D508	A- 3E
R7	B- 3C
R8	B- 3C
R9	B- 3C
R10	B- 3C
R11	B- 3C
R12	B- 3C
R13	B- 3C
R14	A- 3C
R15	B- 3C
R16	A- 3D
R17	B- 3D
R20	B- 3D
R21	B- 3D
R22	B- 3D
R23	B- 3D
R24	B- 3D
R25	B- 3D
R26	A- 3D
R27	B- 3D
R28	B- 3D
R30	B- 4D
R32	B- 2D
R33	B- 3D
R34	B- 2D
R35	B- 2D
R36	B- 3D
R37	B- 3D
R38	B- 3D
R39	B- 3D
R45	B- 1C
R46	B- 1C
R47	B- 3B
R48	B- 4B
R49	B- 4B
R50	B- 1D
R51	B- 1D
R52	A- 3C
R53	A- 4B
R54	B- 3C
R55	B- 3C
R56	B- 4B
R57	B- 4B
R58	B- 4B
R59	A- 4C
R60	A- 4C
R61	A- 4C
R62	A- 3C
R63	A- 3C
R64	A- 3D
R65	A- 3D
R66	A- 3E
R67	A- 3D
R68	B- 4D
R69	B- 4D
R70	B- 4D
R71	B- 4C
R73	B- 4C
R74	B- 4C
R78	B- 1C
R79	A- 3D
R80	A- 3D
R81	A- 3E
R82	B- 3D
R83	B- 2E
R84	B- 3E
R85	A- 1E
R86	A- 1E
R87	A- 1E
R88	A- 1E
R89	A- 1E
R90	A- 1E
R91	B- 2E
R92	B- 2E
R93	A- 1E
R94	B- 2E
R95	B- 2E
R96	A- 2E
R97	B- 2E
R98	B- 2E
R99	A- 2E
R101	A- 1E
R102	A- 1D
R103	A- 1D
R104	A- 1E
R105	A- 1D
R106	A- 1E
R107	A- 2E
R108	A- 2D
R111	B- 2D
R112	B- 2D
R113	B- 2E
R114	A- 2D
R115	B- 2E
R116	B- 2D
R117	B- 2D
R118	A- 2D
R119	A- 2D
R120	B- 2D
R121	B- 2D
R122	B- 2D
R123	B- 2E
R125	A- 2D
R127	A- 1D
R201	A- 1D
R202	A- 1D
R203	A- 1D
R204	B- 1D
R205	A- 2D
R206	B- 1D
R207	A- 2D
R208	B- 2D
R211	B- 2D
R212	B- 2D
R213	B- 2C
R214	A- 2D
R215	A- 2C
R216	B- 2C
R217	A- 2C
R218	B- 2C
R219	A- 2C
R220	B- 2C
R221	A- 2C
R222	A- 2C
R223	B- 2D
R225	A- 1D
R227	A- 1D
R301	A- 1C
R302	A- 1C
R303	A- 1C
R304	B- 1C
R305	A- 1C
R306	B- 1C
R307	A- 2C
R308	A- 1C
R311	B- 1C
R312	B- 2C
R313	B- 2C
R314	B- 2C
R315	A- 2C
R316	A- 2C
R317	A- 1C
R318	B- 2C
R319	A- 2C
R320	A- 2C
R321	A- 2C
R322	A- 2C
R323	B- 2C
R325	B- 1C
R327	A- 2C
R501	B- 5B
R502	B- 5B
R504	A- 5C
R505	B- 5C
R506	B- 6C
R507	A- 6C
R508	A- 6C
R509	B- 5C
R510	B- 5B
R511	B- 5C
R512	B- 4C
R513	B- 5C
R514	A- 5C
R515	A- 5C
R516	B- 5C
R517	B- 5C
R518	B- 5C
R519	B- 5C
R520	B- 5B
R521	B- 5D
R522	B- 5B
R523	B- 6E
R524	B- 6D
R525	B- 3F
R526	B- 3F
R528	B- 4F
R529	B- 4F
R530	A- 6E
R532	B- 5E
R533	A- 5E
R534	B- 5E
R535	B- 5E
R536	B- 5E
R538	B- 4F
R539	B- 4F
R542	B- 4F
R543	B- 4F
R544	B- 4F
R545	B- 4F
R546	A- 5F
R547	A- 5F
R548	A- 5F
R549	A- 5F
R550	A- 5F
R551	B- 5F
R552	B- 5F
R553	B- 5F
R555	A- 2E
R556	A- 2E
R557	A- 2E
R560	A- 2E
R562	A- 5B
R563	A- 5E
R564	A- 4E
R565	A- 4E
R566	B- 5E
R567	B- 4E
R568	B- 4E
R569	B- 3E
R570	B- 3E
R571	B- 3E
R572	B- 2E
R573	B- 1F
R574	A- 2F
R575	A- 2F
R576	A- 1F
R577	A- 1F
R578	A- 2E
R579	A- 2E
R580	A- 2F
R581	A- 2F
R582	B- 3F
R583	B- 3F
R586	A- 3F
R587	A- 3F
R589	B- 1F
R594	B- 1F
R596	B- 1F
R597	B- 2E
R598	B- 1E
R599	B- 1E
R600	A- 1F
R601	A- 1F
R602	A- 2E
R603	A- 1E
R604	A- 1E
R605	A- 3F
R607	A- 6D
R608	B- 4E
R609	A- 2F
R610	A- 6C
R611	B- 1E
R612	A- 1E
R613	A- 4D
R614	A- 2F
R615	B- 1F
R618	B- 4B
R620	A- 3F
R622	B- 5A
R623	B- 5A
R624	B- 5A
R625	B- 3B
R626	A- 5E
R627	A- 3F
R628	B- 4C
R629	A- 3E
R630	A- 4A
R631	A- 4A
R632	A- 4A
R633	A- 4A
R634	A- 4A
R635	A- 4A
R636	B- 5A
R637	A- 4A
R638	B- 5A
R639	B- 6A
R640	A- 5A
R641	A- 4A
R642	A- 5A
R643	A- 5A
R644	A- 5B
R645	A- 5A
R646	A- 5A
R647	A- 5B
R648	A- 5B
R649	A- 5B
R650	B- 6B
R651	B- 5B
R652	B- 5B
R655	A- 5F
R656	A- 5F
R660	A- 4C
R661	B- 5C
R662	B- 5D
R663	B- 6D
R664	B- 4D
R665	A- 4C
R670	A- 4D
R671	A- 4D
R672	A- 4D
R673	A- 4C
R674	A- 4D
R675	A- 4D
R676	A- 4D
R677	A- 4C
R678	A- 4C
R679	A- 4E
R680	B- 4E
R681	B- 4E
R682	B- 4E
R683	B- 5D
R684	A- 5D
R685	A- 5D
VR1	B- 4C
VR2	B- 3D
VR3	B- 4D
VR4	B- 4D
VR5	B- 4D
VR6	B- 3C
VR7	B- 4C
VR501	B- 1F
VR502	B- 2F
VR503	B- 3F
VR504	B- 1F
VR505	A- 4B
VR506	A- 4B
VR507	B- 2F
C1	A- 1C
C2	A- 1C
C3	A- 2D
C4	A- 2D
C5	B- 2C
C6	A- 2D
C7	B- 2C
C8	A- 2C
C9	B- 3D
C10	A- 3C
C11	A- 3D
C12	A- 3D
C13	A- 2D
C14	A- 1D
C15	B- 3B
C16	B- 3C
C17	A- 3B
C18	A- 4B
C19	A- 4C
C20	A- 2D
C21	B- 4C
C22	B- 4D
C23	B- 4C
C24	B- 4C
C27	B- 4D
C29	B- 3C
C30	A- 3D
C32	B- 3D
C34	B- 3E
C35	B- 4C
C36	A- 3C
C37	A- 3C
C38	A- 3D
C39	A- 3D
C40	B- 3E
C41	B- 2E
C43	A- 3C
C44	A- 3D
C45	A- 3E
C46	A- 4C
C101	A- 1D
C102	A- 1D
C103	A- 1D
C104	B- 2D
C105	A- 2D
C106	A- 2D
C107	A- 2E
C108	A- 2E
C109	B- 2D
C110	B- 2D
C111	A- 1E
C112	B- 2D
C201	A- 1D
C202	A- 1D
C204	B- 2D
C205	A- 2D
C207	A- 2D
C209	B- 2C
C210	A- 2C
C212	B- 2D
C301	A- 1C
C302	A- 1C
C304	B- 2C
C305	A- 2C
C307	A- 1C
C309	A- 2C
C310	A- 2C
C311	A- 1D
C312	B- 2C
C501	A- 4C
C502	A- 4C
C503	B- 5B
C504	B- 5B
C505	B- 5C
C506	B- 5C
C507	A- 5C
C508	A- 6C
C509	B- 6C
C510	B- 5B
C511	B- 5C
C512	A- 5C
C513	B- 5C
C514	B- 5C
C515	A- 4C
C516	A- 5C
C517	A- 5C
C518	A- 5C
C519	B- 6E
C520	A- 6E
C521	A- 6E
C522	B- 6D
C523	B- 6E
C524	A- 5A
C525	B- 4E
C526	A- 5E
C527	A- 6E
C528	A- 4F
C529	A- 4F
C530	B- 3F
C531	B- 5E
C532	B- 5E
C533	B- 5E
C534	B- 5E
C535	A- 5B
C536	A- 5F
C537	A- 5F
C538	A- 5F
C539	A- 4F
C540	B- 5F
C541	B- 5F
C542	B- 5E
C543	B- 5E
C544	A- 2E
C545	A- 2E
C546	A- 5B
C547	A- 6D
C548	A- 6C
C549	A- 6C
C550	A- 5D
C551	A- 4C
C552	B- 5D
C554	A- 5B
C555	A- 5E
C556	A- 5E
C557	B- 5E
C558	B- 4E
C559	B- 4E
C560	B- 3E
C561	A- 4E
C562	A- 2E
C563	A- 2E
C564	B- 2F
C565	B- 2F
C566	A- 3F
C567	B- 2F
C568	B- 2F
C569	A- 2F
C570	B- 2F
C571	B- 3F
C572	A- 2F
C573	A- 2F
C574	A- 2F
C575	A- 2F
C576	B- 2F
C577	B- 2F
C578	B- 1F
C579	B- 1F
C580	A- 3F
C581	A- 3F
C582	A- 3E
C583	B- 3E
C585	A- 4F
C586	A- 2E
C587	B- 5A
C588	B- 5A
C589	B- 5A
C590	B- 2F
C591	A- 4A
C592	A- 2F
C593	A- 4A
C594	B- 5A
C595	A- 4A
C596	A- 4A
C597	A- 5A
C598	A- 5A
C599	A- 5B
C600	A- 5A
C601	A- 5A
C602	B- 5B
C603	B- 2E
C604	A- 1E
C608	B- 4B
C609	B- 5D
C610	A- 4D
C611	B- 4E
C612	B- 4E
C613	B- 4E
C614	A- 4E
C615	B- 4E
C616	B- 5D
C617	A- 4D
C618	A- 4D
C619	A- 4D
C620	A- 4D
C621	A- 4D
C622	A- 4C
C623	B- 4D
VC1	B- 4E
VC2	B- 4E
L101	B- 1E
L102	B- 1D
L103	B- 1C
L501	B- 3F
L502	B- 1F
L503	B- 1F
L505	A- 5A
DL1	A- 3C
DL101	A- 1D
DL201	A- 1C
DL301	A- 1C
TP1	B- 1E
TP2	B- 1E
TP3	B- 1E
TP4	B- 1F
TP5	A- 6B
TP6	B- 3E
TP7	B- 3E
TP8	B- 1F
TP9	B- 4E
TP10	B- 6D
TP11	A- 6B
TP12	A- 6B
TP13	B- 3E
CN29	A- 1E
CN30	A- 1F
CN31	A- 4C
CN32	A- 3B
S1	A- 6B
S2	B- 4B
X1	A- 4E
X2	A- 4E

— Component Side (A) —

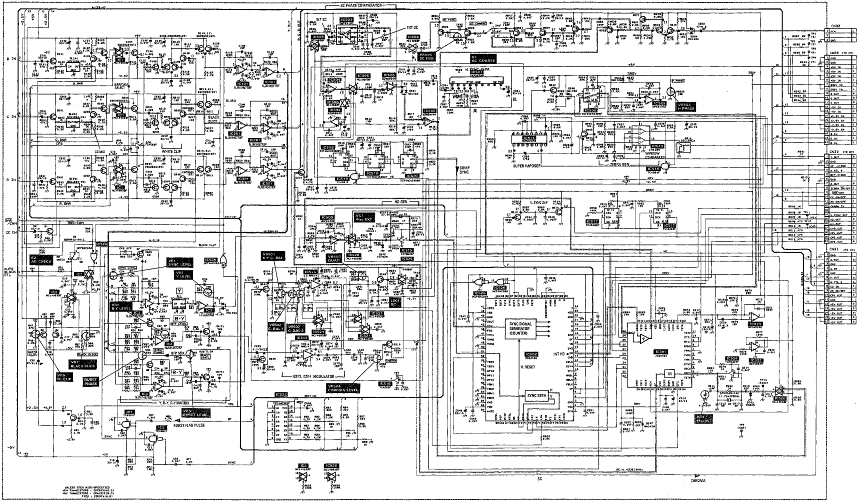


— Soldered Side (B) —



5.23P P. SE BOARD SCHEMATIC DIAGRAM 5 8 P [PAL]

(Sync signal generator and color Encorder)


SC PHASE COMPARATOR
INT SC
EXT SC
IC503
IC504
IC505
IC506
IC507
IC508
IC509
IC510
IC511
IC512
IC513
IC514
IC515
IC516
IC517
IC518
IC519
IC520
IC521
IC522
IC523
IC524
IC525
IC526
VR505 SC FINE
S1 SC COARSE
H. SYNC SEPA
VR505 H PHASE
WINDOW COMPARATOR
SUPER IMPOSER
ZEBRA GEN
COMP SYNC
HD GEN
VC1 4fsc EXT
V. SYNC SEP
VR501 B-Y C. BAL
VR502 C. BAL 2
VR503 DUAL
VR504 CHROMA LEVEL
IC513, IC514 MODULATOR
SYNC SIGNAL GENERATOR (COUNTER)
IC502
V. RESET
SYNC SEPA
INT HD
IC501
VC2 4fsc INT
B IN
G IN
R IN
BAR /CAM
CC IN
AUTO BLACK CTL
B.BAR
G.BAR
R.BAR
BAR/CAM SELECT
CC MIX
WHITE CLIP
BL MIX
BLACK SLICE
BLACK CLIP
W.CLIP
IC101
IC201
IC301
IC1
IC2
IC3
IC4
IC5
IC6
IC7
S2 AB CHECK
VR1 SYNC LEVEL
VR2 Y LEVEL
VR4 B-Y LEVEL
VR6 W. CLIP
VR7 BLACK SLICE
BURST PHASE
VR8 BURST LEVEL
Y
B-Y
R-Y
BFP MIX
Y, B-Y, R-Y MATRIX
BURST FLAG PULSE
SYNC
+2.5V
-5V
SC
CHROMA
CN32
CN29
CN30
CN31

5.24 CP CIRCUIT BOARD

● ADDRESS TABLE OF BOARD PARTS

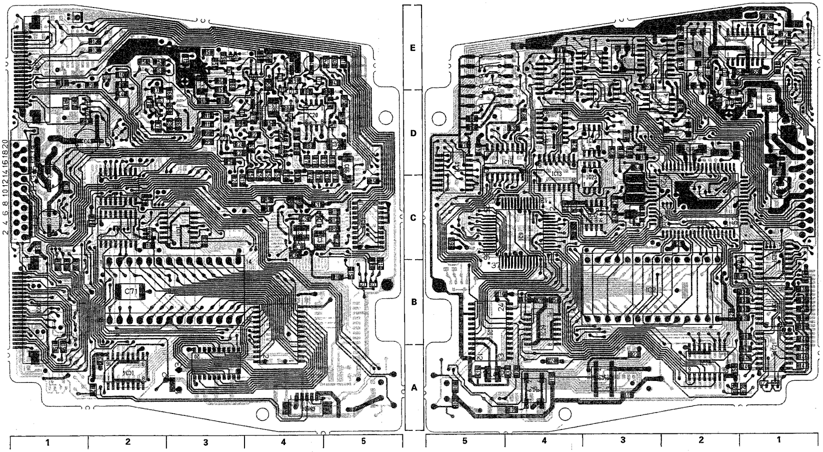
Each address may have an address error by one interval.

A-1C
Side — A
1 — X axis
C — Y axis

Part	Address
IC1	B-2C
IC2	A-2B
IC3	A-4A
IC4	B-1B
IC5	A-3A
IC6	A-2C
IC7	B-5B
IC8	A-2C
IC9	B-4C
IC11	A-3C
IC12	B-3C
IC13	B-4D
IC14	B-3D
IC15	B-3E
IC16	B-3D
IC17	B-3E
IC18	B-3E
IC19	B-4D
IC20	A-5D
IC21	B-1B
IC22	B-3C
IC23	B-4E
IC25	B-3D
IC28	B-2A
IC29	B-4B
IC30	B-1C
IC31	A-4D
IC32	A-4D
IC34	A-2A
IC35	B-4D
IC36	B-2E
IC37	A-2C
IC38	B-1D
IC39	A-5C
IC40	B-5D
Q5	A-2D
Q6	A-2D
Q10	A-4D
D1	A-2D
D2	A-2D
D3	B-3D
D4	A-4C
D5	A-3E
D6	A-3E
D7	A-4E
D8	A-5D
D9	A-4D
D10	A-4E
D11	B-2E
D12	A-4E
D13	A-4E
D14	A-4E
D15	A-2E
D18	B-2D
D20	A-3D
D22	B-1A
D23	B-1A
D24	B-2B
D25	A-5B
D26	A-5B
R1	A-1D
R2	A-1D
R3	A-2D
R5	A-4C
R6	A-4C
R7	A-4C
R8	A-4C
R9	A-5C
R12	A-5C
R13	A-5C
R14	B-4B
R15	A-5B
R16	A-5B
R19	A-5B
R20	A-3C
R21	B-4D
R22	A-4D
R23	A-3D
R24	A-3D
R25	B-3D
R26	B-4C
R27	A-2C
R42	A-5E
R43	A-5E
R44	B-3D
R45	B-3C
R46	A-5E
R47	B-2E
R49	B-2E
R50	A-2E
R51	A-2E
R52	A-2E
R53	B-3E
R54	A-3E
R55	A-3E
R56	A-3E
R57	A-4D
R58	A-4E
R59	A-3E
R61	A-3E
R62	A-3D
R63	A-3D
R64	A-3E
R65	A-4E
R66	A-4E
R67	A-3E
R68	A-3D
R69	A-3D
R70	A-2D
R71	A-2D
R72	A-2E
R73	A-5D
R74	A-4D
R75	A-4D
R76	A-5D
R77	A-4D
R78	A-4D
R79	A-5D
R80	A-4D
R81	A-5D
R82	A-4D
R83	A-4D
R84	A-4D
R85	B-2E
R87	B-4D
R88	A-5E
R89	A-5D
R90	A-4E
R91	A-4E
R92	A-1E
R93	A-2E
R94	A-3D
R95	A-3D
R96	A-3D
R100	A-2E
R101	A-2E
R102	B-1E
R103	A-2C
R104	A-1C
R105	A-1C
R106	A-1C
R107	B-5A
R108	B-5A
R109	B-4A
R110	A-3D
R111	A-3D
R112	A-5E
R113	B-3D
R114	A-5B
R115	B-3D
R116	B-3D
R117	B-3D
R118	B-4A
R119	B-3A
R120	B-2A
R122	B-1A
R123	A-2A
R124	B-4A
R125	A-2E
R126	B-1E
R127	B-1E
R128	B-1E
R129	B-1E
R130	A-2E
R131	B-1B
R132	B-1B
R133	B-1B
R134	B-1B
R135	B-1B
R136	B-1B
R137	B-1B
R138	B-1B
R139	B-1B
R140	B-1A
R141	B-1A
R142	B-1A
R143	B-1B
R144	B-1B
R145	B-1B
R146	B-1A
R147	B-1A
R148	B-2E
R149	B-2D
R150	A-3D
R151	A-3D
R152	A-4D
R153	A-1B
R154	A-1B
R155	B-1B
R156	A-3E
R157	A-5D
R158	A-5D
R159	A-5C
R160	B-5D
R161	B-5D
R162	B-4E
VR1	B-2E
VR2	B-2E
VR3	B-2D
VR5	B-3E
C1	A-4C
C2	A-5C
C3	A-4C
C5	A-4C
C7	A-4C
C8	A-4C
C9	B-4B
C10	B-5B
C11	B-5A
C12	B-4A
C13	A-4D
C14	A-4D
C15	A-4C
C16	B-4C
C17	A-1C
C18	B-2D
C19	B-2E
C20	B-3C
C21	B-2C
C22	B-3A
C23	B-2B
C24	B-4A
C26	B-2E
C27	B-4E
C28	A-3C
C29	A-2C
C31	B-4E
C33	A-3E
C34	A-4D
C35	A-3D
C36	B-2D
C37	A-5D
C38	A-4D
C39	B-4D
C40	B-5D
C41	A-4E
C42	A-2E
C43	A-2D
C44	A-1D
C45	B-1D
C46	A-1C
C47	A-4E
C49	A-4D
C50	A-4D
C51	A-4D
C52	B-2A
C54	B-4B
C55	A-4D
C56	A-4D
C57	A-1C
C58	B-1B
C62	A-2A
C63	B-2D
C64	B-2E
C65	B-1E
C66	A-5D
C67	B-1D
C68	B-1D
C69	B-5C
C70	B-5D
C71	A-2B
L1	B-1D
L2	B-1C
L3	A-4C
L4	B-5A
TP1	A-5B
TP2	B-2D
TP3	B-2D
TP4	B-1E
TP5	B-4C
S1	B-5E
S2	A-5A
S3	B-4A
S4	B-3A
S5	A-3A
CN21	A-1E
CN22	A-1C
CN23	A-1B
CN100	A-4A
AN4	A-1E
X1	B-3C

— Component Side (A) —

— Soldered Side (B) —



5.25 CP BOARD SCHEMATIC DIAGRAM 5 9
(CPU board)

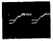
IC9, which is an area gate generator for multi-zone weighting, has five general purpose ports to output parallel data that are supplied as serial data from the CPU.

Latch for switching gain of the video amp. in V. blanking period

Gray scale

Peak holded Video
V-rate

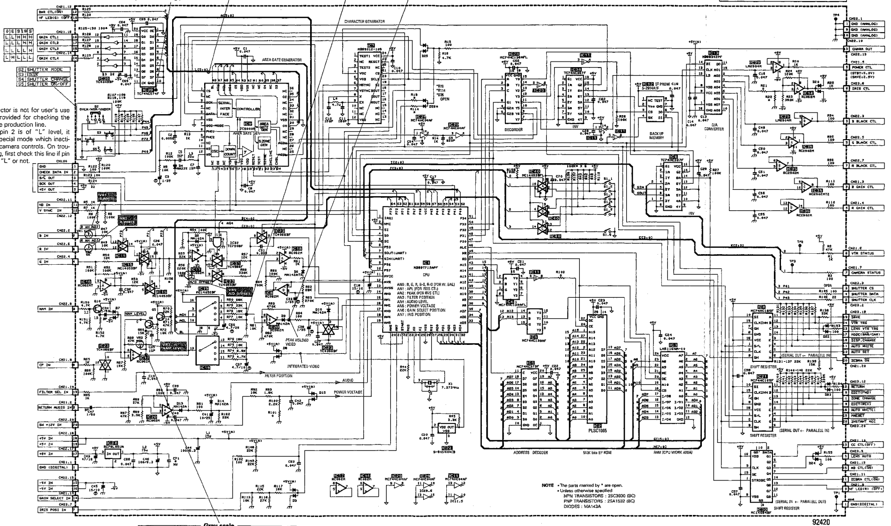
Gray scale


Weited Video signal
V-rate

Main Functions of CP board

- Auto black balance control
- Auto white balance control
- Auto iris control
- Status detection of camera sections
- Control of camera section
- Communication with VTR's CPU

This connector is not for user's use and it is provided for checking the board in the production line. If CN100 pin 2 is of "L" level, it makes a special mode which inactivate all of camera controls. On troubleshooting, first check this line if pin 2's level is "L" or not.


CHARACTER GENERATOR
AREA GATE GENERATOR
CPU
AN0 : B, G, R, B-G, R-G (FOR W. BAL)
AN1 : APL (FOR IRIS CTL)
AN2 : PEAK (FOR IRIS CTL)
AN3 : FILTER POSITION
AN4 : AUDIO LEVEL
AN5 : POWER VOLTAGE
AN6 : GAIN SELECT POSITION
AN7 : IRIS POSITION
DECORDER
BACK UP MEMORY
D/A CONVERTER
ADDRESS DECODER
512K bits EP ROM
RAM (CPU WORK AREA)
SHIFT RESISTER
(SERIAL OUT ← PARALELL IN)
(SERIAL IN ← PARALELL OUT)
PEAK HOLDED VIDEO
INTEGRATED VIDEO
FILTER POSITION
AUDIO
POWER VOLTAGE
S2 SHUTTER MODE
S3 10LUX
S4 SHUTTER CHANGE
S5 SHUTTER ON/OFF
GND
CHECK DATA IN
S/L OUT
SCK OUT
+5V OUT
CN100
BAR CTL(ON)
VF LED(G) (OFF)
GAIN CTL1
GAIN CTL2
GAIN CTL3
GAIN CTL4
HD IN
V SYNC IN
B IN
R IN
G IN
NAM IN
CP IN
FILTER SEL IN
RETURN AUDIO IN
SW +12V IN
+5V IN
+8V IN
GND (DIGITAL)
-5V IN
GAIN SELECT IN
IRIS POSI IN
GND (ANALOG)
CHARA OUT
POWER CTL
IRIS CTL
B BLACK CTL
G BLACK CTL
R BLACK CTL
B GAIN CTL
R GAIN CTL
VTR STATUS
CAMERA STATUS
SHUTTER CS
SHUTTER DATA
SHUTTER CLK
SAVE
VTR TRG
LENS VTR TRG
MODE(BAR/CAM)
DISP. CHANGE
AUTO WHITE
AUTO SET
ZEBRA ON
RETURN
EDIT(FWD)
ZONE CHANGE
EDIT(REV)
AUTO WHITE
PRESET
INSTANT REC
CC CTL(OFF)
LENS AUTO
AB CTL(ON)
ZEBRA CTL(ON)
VF LED(R) (OFF)
GND(DIGITAL)

NOTE
- The parts marked by * are open.
- Unless otherwise specified
  NPN TRANSISTORS : 2SC3930 (BC)
  PNP TRANSISTORS : 2SA1532 (BC)
  DIODES : MA143A

92420

Gray scale
Knee compressed Video signal

COMPRESSED
100% VIDEO

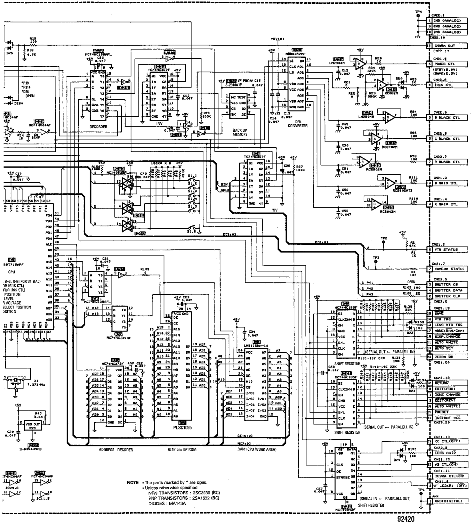
H-rate
V-rate

le

signal

Main Functions of CP board

- Auto black balance control
- Auto white balance control
- Auto iris control
- Status detection of camera sections
- Control of camera section
- Communication with VTR's CPU


CPU
DECODER
INV
BACK UP MEMORY
E² PROM
D/A CONVERTER
ADDRESS DECODER
512K bits EP ROM
RAM (CPU WORK AREA)
SHIFT RESISTER
(SERIAL IN ← PARALELL OUT)
(SERIAL OUT ← PARALELL IN)
PLSC1065
GND (ANALOG)
CAMERA OUT
POWER CTL
IRIS CTL
B BLACK CTL
G BLACK CTL
R BLACK CTL
B GAIN CTL
R GAIN CTL
VTR STATUS
CAMERA STATUS
SHUTTER CS
SHUTTER DATA
SHUTTER CLK
SAVE
VTR TRG
LENS VTR TRG
MODE(BAR/CAM)
DISP.CHANGE
AUTO WHITE
AUTO SET
ZEBRA ON
RETURN
EDIT(FWD)
ZONE CHANGE
EDIT(REV)
AUTO WHITE1
PRESET
INSTANT REC
CC CTL(OFF)
LENS AUTO
AE CTL(ON)
ZEBRA CTL(ON)
VF LED(R) (OFF)
GND(DIGITAL)
92420

NOTE • The parts marked by * are open.
• Unless otherwise specified
NPN TRANSISTORS : 2SC3930 (BC)
PNP TRANSISTORS : 2SA1532 (BC)
DIODES : MA143A

■ CPU (IC1) I/O PORT ALLOTMENT

1. Ports connected with A/D converter

Input of analaog voltage to these ports are converted into digital value, which is supplied to the processing unit.

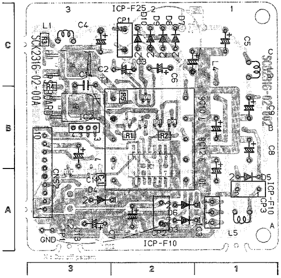
Pin No.	Port No.	I/O	Function	Remarks
14	AN0	I	B, G, R, B-G, R-G video level detection	IC15 is switched every 1 vertical period to input video signals on respective channels. • In Auto White operation : B-G, R-G signals • In Auto Black operation : B, G, R signals • In Check mode : B-G, R-G, B, G, R, G-G signals
15	AN1	I	NAM VIDEO (APL) detection	Input of mean value that NAM (No Additive Mixed B, G and R) signal is weighted in the multi-zone.
16	AN2	I	NAM VIDEO (PEAK) detection	Input of the peak value of the above signal.
17	AN3	I	Filter position detection	Input of voltage to express setting position of the optical filter. • 0 V : 3200 K • 1.18 V : 5600 K • 3.70 V : 5600 K + ND
18	AN4	I	Audio level detection	Detection of audio level to display in the viewfinder.
19	AN5	I	Power voltage detection	Detection of supply voltage to display in the viewfinder. • Display voltage = 0.3 V + Input voltage x 10
20	AN6	I	GAIN SW position detection	Input of voltage to express switch setting position. • 0 V : • • 2.5 V : •• • 5 V : •••
21	AN7	I	Iris position detection	Detection of lens iris ring setting position.

(Continued on the next page)

2. Parallel input/output ports

<table>
<tr><th>Pin No.</th><th>Port No.</th><th>I/O</th><th>Function</th><th>Remarks</th></tr>
<tr><td>6
9
10
51</td><td>P53
P56
P57
P34</td><td>O
I
I
I</td><td>For input of setting data of CHECK SW (S1).
P53 changes over multiplexer IC40 to input setting data of six switches through these three ports.</td><td><table>
<tr><th>P53 output</th><th>H</th><th>L</th></tr>
<tr><td>P34 input</td><td>FUNCTION SELECT setting</td><td>LENS TRIGGER setting</td></tr>
<tr><td>Pin 56 input</td><td>CHECK MODE ON/OFF</td><td>CONTOUR/BLACK setting</td></tr>
<tr><td>Pin 57 input</td><td>QREC ALC SW setting</td><td>ALC/FAW SW setting</td></tr>
</table>
For switch functions, refer to the section 1. "Service Cautions and Disassembly".</td></tr>
<tr><td>47
48
49
50</td><td>P30
P31
P32
P33</td><td>O
O
O
O</td><td>CHIP SELECT signal
CHIP SELECT signal
CHIP SELECT signal
ENABLE signal</td><td>This CPU outputs serial data to control camera sections from pin 4 "SO" while it inputs data for detecting status of camera sections through pin 3 "SI". Lines to pins 4 and 3, "SO" and "SI", are connected with multiple ICs to comprise bus lines. This CPU exchanges data with those ICs without fail since it, owing to the function of IC28, selects only one IC at a time to transmit/receive data timely with its opeation. For sequential selection of ICs, 4-bit data outputs of P30 through P33 are used.
<table>
<tr><th>P33</th><th>P32</th><th>P31</th><th>P30</th><th>Line selected by IC28</th><th>Description</th></tr>
<tr><td>L</td><td>X</td><td>X</td><td>X</td><td>X</td><td>None of P32, P31, P33 selected</td></tr>
<tr><td>H</td><td>L</td><td>L</td><td>L</td><td>Y0</td><td>IC8 (buffer) selected. Accordingly, setting modes of switches inside and outside camera are read in. Moreover, communication line with VTR is connected.</td></tr>
<tr><td>H</td><td>L</td><td>L</td><td>H</td><td>Y1</td><td>IC30 (serial-parallel data converter) selected.
ON/OFF control signal is output for camera sections.</td></tr>
<tr><td>H</td><td>L</td><td>H</td><td>L</td><td>Y2</td><td>Not used</td></tr>
<tr><td>H</td><td>L</td><td>H</td><td>H</td><td>Y3</td><td>IC12 (E^2PROM) selected.</td></tr>
<tr><td>H</td><td>H</td><td>L</td><td>L</td><td>Y4</td><td>IC13 (D-A converter) selected. Analog voltage for lens iris control, white balance control amp, etc. is output.</td></tr>
<tr><td>H</td><td>H</td><td>L</td><td>H</td><td>Y5</td><td>IC7 (character generator) selected</td></tr>
<tr><td>H</td><td>H</td><td>H</td><td>L</td><td>Y6</td><td>IC9 (area gate generator) selected</td></tr>
<tr><td>H</td><td>H</td><td>H</td><td>H</td><td>Y7</td><td>IC34 (buffer) selected</td></tr>
</table></td></tr>
<tr><td>52</td><td>P40</td><td>I</td><td>SHUTTER ON/OFF detection</td><td>"L": Active</td></tr>
<tr><td>56</td><td>P44</td><td>I</td><td>"IRIS UNDER" detection</td><td>Detection of IRIS OVER/NORM/UNDER switch setting</td></tr>
<tr><td>57</td><td>P45</td><td>I</td><td>"IRIS OVER" detection</td><td>Detection of IRIS OVER/NORM/UNDER switch setting</td></tr>
<tr><td>59</td><td>P46</td><td>I</td><td>LOLUX SW setting detection</td><td>"L": Active</td></tr>
<tr><td>63</td><td>P72</td><td>I</td><td>SHUTTER SELECT detection</td><td>"L": Active</td></tr>
<tr><td>53</td><td>P41</td><td>O</td><td>GAIN CTL latch</td><td>Controls to output control signal to the gain control amp (0 dB ↔+18 dB) timely with V. blanking in order to up-gain switching in V. blanking period.</td></tr>
<tr><td>54
55</td><td>P42
P43</td><td>O
O</td><td>SHUTTER CTL data
SHUTTER clock</td><td>Serial data output for shutter speed setting.
Clock pulse output for reading the above serial data by shutter controller.</td></tr>
<tr><td>60</td><td>P47</td><td>O</td><td>RESET INTEGRATION</td><td>Turns on IC23 to reset video level detection circuit and NAM signal level detection integral circuit.</td></tr>
<tr><td>61</td><td>P70</td><td>O</td><td>B/R SELECT</td><td rowspan="2">With IC15, this switches B,/R/G channel signals every 1V in the white balance/black balance detection circuit.</td></tr>
<tr><td>62</td><td>P71</td><td>O</td><td>(B/R)/G SELECT</td></tr>
<tr><td>64</td><td>P73</td><td>O</td><td>–G MIX ON/OFF</td><td>Selects mixing of –G(inverted G) signal into the above (P70, P71) signal or not.</td></tr>
</table>

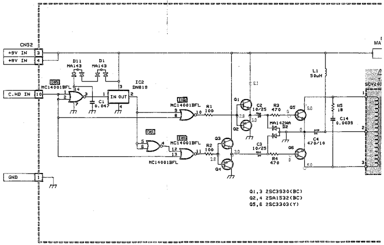
5.26 PS CIRCUIT BOARD



3
ICP-F25
2
1
L1
C4
CP1
D10
D9
D8
D7
C5
SCK2316-02-00A
C2
C6
C9
C8
R3
R4
R5
R1
R2
CN52
D4
D5
ICP-F10
CP3
D6
D3
C7
L5
GND
A
ICP-F10
C
B
A
3
2
1

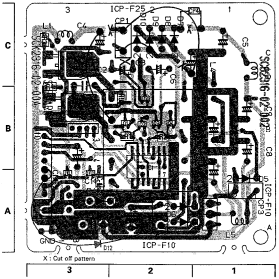
5.27 PS BOARD SCHEMATIC DIAGRAM 6 0

(Power Supply board)



CN52
+9V IN 3
+9V IN 4
C.HD IN 10
GND 1
D11 MA143
D1 MA143
IC1 MC14001BFL
IC2 DN819
IN OUT
C1 0.047
IC1 MC14001BFL
R1 100
IC1
IC1 MC14001BFL
R2 100
MC14001BFL
Q1
Q2
Q3
Q4
C2 10/25
R3 470
Q5
MA142WA D2
C3 10/25
R4 470
Q6
L1 50uH
R5 18
C14 0.0039
C4 470/10
SCV20
MA
Q1,3 2SC3930(BC)
Q2,4 2SA1532(BC)
Q5,6 2SC3303(Y)

5.26 PS CIRCUIT BOARD


3
ICP-F25
2
1
CP1
CP4
D10
D9
D8
D7
C4
L1
C5
C2
C6
L4
C8
C14
D5
ICP-F10
CP3
SCK2316-02-00A
A
B
C
GND
D12
ICP-F10
L5
3
2
1

X : Cut off pattern

● ADDRESS TABLE OF BOARD PARTS

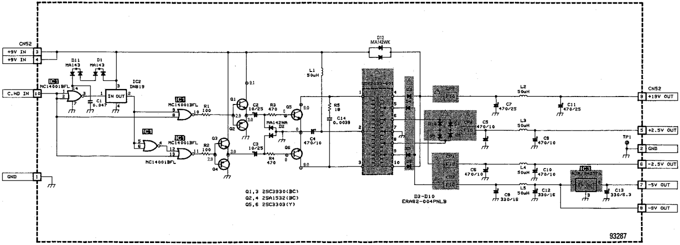
Each address may have an address error by one interval.

A-1C
Side
Y axis
X axis

IC1	B-2B
IC2	A-3B
IC3	A-1A
Q1	B-2B
Q2	B-2B
Q3	B-2B
Q4	B-2B
Q5	B-3C
Q6	B-3B
D1	B-3A
D2	B-2B
D3	A-1A
D4	A-2A
D5	A-1A
D6	A-1A
D7	A-2C
D8	A-2C
D9	A-2C
D10	A-2C
D11	B-3A
R1	B-2B
R2	B-2B
R3	B-3C
R4	B-3B
R5	B-2B
C1	B-3A
C2	A-2C
C3	A-2C
C4	A-3C
C5	A-1C
C6	A-2C
C7	A-2A
C8	A-1B
C9	A-1B
C10	A-1B
C11	A-3B
C12	A-1B
C13	A-3A
C14	A-3C
L1	A-3C
L2	A-3A
L3	A-1C
L4	A-1B
L5	A-1A
TP1	A-3A
CP1	A-2C
CP2	A-2A
CP3	A-1A
T1	A-2B
CN52	A-3A

5.27 PS BOARD SCHEMATIC DIAGRAM 60
(Power Supply board)

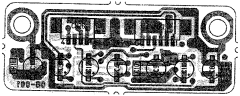
- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.


CN52
+9V IN 3
+9V IN 4
C.HD IN 10
GND 1
D11 MA143
D1 MA143
IC1 MC14001BFL
IC2 DN819
IN OUT
C1 0.047
IC1 MC14001BFL
R1 100
IC1
IC1 MC14001BFL
R2 100
MC14001BFL
Q1
Q2
Q3
Q4
C2 10/25
R3 470
Q5
C3 10/25
R4 470
Q6
MA142WA D2
C4 470/10
9.1
2.9
3.0
9.0
0
L1 50uH
R5 18
C14 0.0039
D12 MA142WK
T1
D3
D4
D5
D6
D10
D7
D9
D8
CP2
CP4
CP1
CP3
L2 50uH
C7 470/25
C11 470/25
C5 470/10
L3 50uH
C9 470/10
TP1
C6 470/10
L4 50uH
C10 470/10
L5 50uH
C8 330/16
C12 330/16
IC3
IN OUT
C13 330/6.3
D3-D10 ERA82-004PNLB
CN52
9 +19V OUT
5 +2.5V OUT
2 GND
6 -2.5V OUT
7 -5V OUT
8 -9V OUT
93287

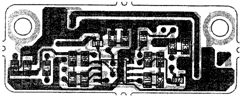
Q1,3 2SC3930(BC)
Q2,4 2SA1532(BC)
Q5,6 2SC3303(Y)

5.28 AU CIRCUIT BOARD

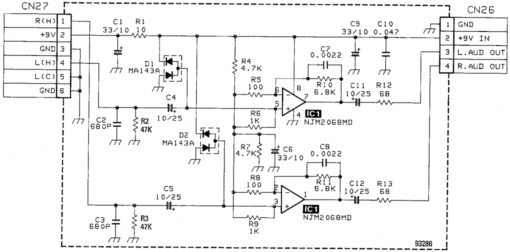
— Component Side (A) —



— Soldered Side (B) —



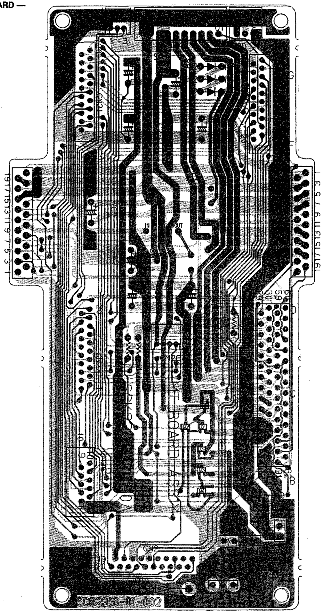
5.29 AU BOARD SCHEMATIC DIAGRAM 6 1
(Audio board)



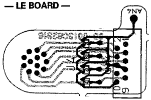
CN27
R(H) 1
+9V 2
GND 3
L(H) 4
L(C) 5
GND 6
C1 33/10
R1 10
D1 MA143A
C2 680P
R2 47K
C4 10/25
D2 MA143A
C5 10/25
C3 680P
R3 47K
R4 4.7K
R5 100
R6 1K
R7 4.7K
C6 33/10
R8 100
R9 1K
C7 0.0022
R10 6.8K
C11 10/25
R12 68
C8 0.0022
R11 6.8K
C12 10/25
R13 68
C9 33/10
C10 0.047
IC1 NJM2068MD
IC1 NJM2068MD
CN26
1 GND
2 +9V IN
3 L.AUD OUT
4 R.AUD OUT
93286

5.30 MT/LE/SW2 CIRCUIT BOARD

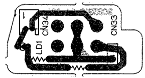
— MT BOARD —


CN2
IN
OUT
SC82316-01-002
MT BOARD ASSY
1
3
19
20

— LE BOARD —


AN4
SC82316

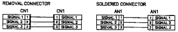
— SW2 BOARD —


CN34
CN33
LD1

5.31 OVERALL WIRINGS (Include MT, REG, LE, SW1 – SW5, BNC board Schematic diagram)

- Shaded (⚠) parts are critical for safety. Replace only with specified part numbers.

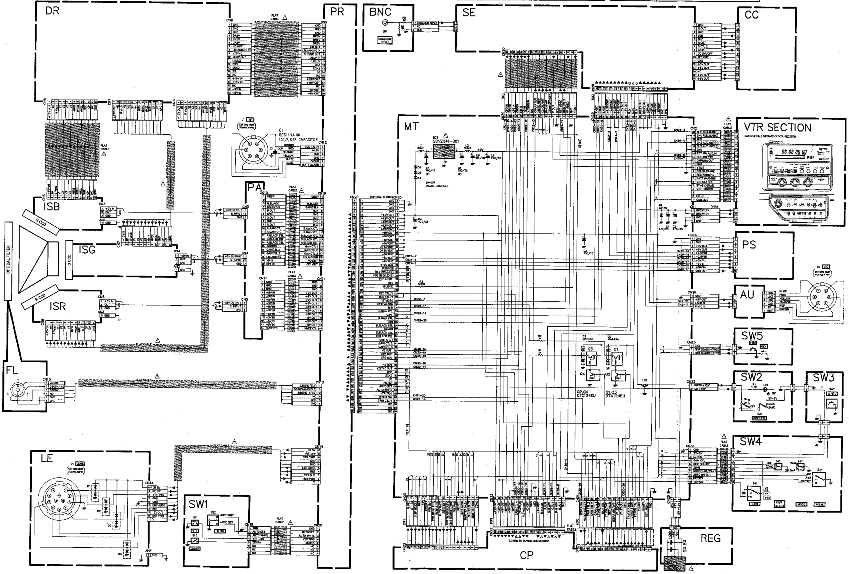
NOTE: THE CONNECTIONS OF THIS SCHEMATIC DIAGRAM INDICATES AS FOLLOWS;


REMOVAL CONNECTOR
CN1
CN1
SIGNAL 1
SIGNAL 2
SIGNAL 3
SOLDERED CONNECTOR
AN1
AN1
SIGNAL 1
SIGNAL 2
SIGNAL 3

Parts List for Flat cables

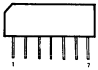
Connection		Part No.
MT board ,CN2	VTR SECTION	PGW0206-120200
DR board ,CN6	ISB board ,CN6	SCV2098-1412R
DR board ,CN7	ISG board ,CN7	SCV2098-1412R
DR board ,CN8	ISR board ,CN8	SCV2098-1412R
DR board ,CN9	PR board ,CN9	SCV2098-2006R
PA board ,CN1	PR board ,CN1	SCV2098-2008K
PA board ,CN1	PR board ,CN1	SCV2098-1408K
FL board ,CN1	PR board ,CN1	SCV2098-0620K

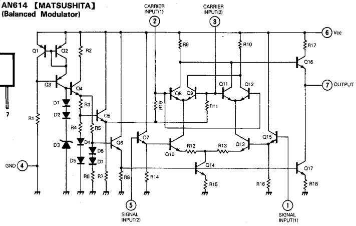
Connection		Part No.
LE board ,CN1	PR board ,CN1	SCV2098-1015K
SW1 board ,CN1	PR board ,CN1	SCV2098-0817K
MT board ,CN2	CP board ,CN2	SCV1902-2006R
MT board ,CN2	CP board ,CN2	SCV1902-2006R
MT board ,CN3	SE board ,CN3	SCV1902-2006R
MT board ,CN3	SW4 board ,CN3	SCV1902-1012R


DR
PR
BNC
SE
CC
MT
VTR SECTION
SEE OVERALL WIRINGS OF VTR SECTION
PA
ISB
ISG
ISR
B CCD
G CCD
R CCD
OPTICAL FILTER
FL
LE
SW1
PS
AU
SW5
SW2
SW3
SW4
REG
CP
FLAT CABLE
C1
DCS11HJ-101
100pF, CER CAPACITOR
IC1
SCV2241-001
D2,D4
DTC124EU
Q1,Q3
DTA124EU
BOARD TO BOARD CONNECTOR
GENLOCK INPUT
OPTICAL BLOCK

5.32 SCHEMATIC DIAGRAM of IC's

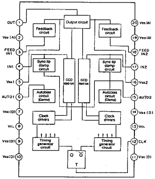
■ AN614 【MATSUSHITA】
(Balanced Modulator)



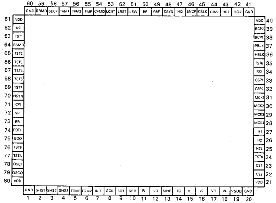

CARRIER INPUT(1)
②
CARRIER INPUT(2)
③
⑥ Vcc
Q1
Q2
R2
R9
R10
R17
Q16
Q3
Q4
Q8
Q9
Q11
Q12
⑦ OUTPUT
D1
R3
R19
R11
D2
Q5
R1
R4
R5
D4
Q7
Q15
D3
Q6
R12
R13
Q13
D6
Q10
D5
D7
Q14
GND ④
Q17
R6
R7
R8
R14
R15
R16
R18
⑤
SIGNAL INPUT(2)
①
SIGNAL INPUT(1)

AN614 SCHEMATIC DIAGRAM

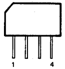
■ CXL1009P 【SONY】
(CCD Signal Processor for TBC)


OUT ①
V_{DD} (A) ②
FEED IN1 ③
IN1 ④
V_{DD}1 ⑤
AUTO1 ⑥
Vss (D) ⑦
V_{CL} ⑧
Vss (D) ⑨
V_{DD} (D) ⑩
⑳ Vss (A)
⑲ V_{DD} (A)
⑱ FEED IN2
⑰ IN2
⑯ V_{DD}2
⑮ AUTO2
⑭ Vss (D)
⑬ V_{CL}
⑫ CLK
⑪ Vss (D)
Output circuit
Feedback circuit
Feedback circuit
Sync tip clamp circuit
Sync tip clamp circuit
CCD 680 bit
CCD 680 bit
Autobias circuit (Center)
Autobias circuit (Clamp)
Clock drivers
Clock drivers
Timing generator circuit
Timing generator circuit
Q
Q̄
T

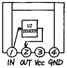
■ JCS0005 【JVC】
(Area Gate Generator)


60 GND
59 SRMD
58 SDLY
57 TVM1
56 TVM2
55 FMP
54 CFMD
53 LCNT
52 LRST
51 LSW
50 BF
49 PBF
48 CSYN
47 HD
46 ENCP
45 CBLK
44 CINV
43 HG1
42 HG2
41 GND
61 VDD
62 NC
63 TST1
64 SSMD
65 TST2
66 TST3
67 TST4
68 TST5
69 TST7
70 HSYN
71 CPI
72 VRI
73 RPI
74 PBTH
75 EDO
76 TST9
77 TSTA
78 OSCI
79 OSCO
80 VDD
40 VDD
39 BCP2
38 BCP1
37 PBLK
36 HBLK
35 TST6
34 RO
33 CSP1
32 CSP2
31 MCK1
30 MCK2
29 MCK3
28 MCK4
27 H1
26 H2
25 H2L
24 TST8
23 CS1
22 CS2
21 VDD
1 GND
2 SHS1
3 SHS2
4 SHS3
5 TGM1
6 TGM2
7 INIT
8 SCK
9 SDT
10 SRD
11 FI
12 VD
13 SIND
14 TG
15 V1
16 V2
17 V3
18 V4
19 VSUB
20 GND

■ DN819 【MATSUSHITA】
(Integrated Injection Logic Frequency Divider)



1 : INPUT
2 : OUTPUT
3 : Vcc
4 : GND

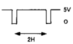

1/2 DEVIDER
①
②
③
④
IN
OUT
Vcc
GND

JCS0005

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>I/O</th><th>Pin Name</th><th>Function</th></tr>
<tr><td>1</td><td>GND</td><td>—</td><td>GND</td><td></td></tr>
<tr><td>2</td><td>SHS1</td><td>I</td><td>Shutter Speed Setting 1</td><td rowspan="3">Terminals for setting shutter speed. All of these pins are grounded since shutter speed is set by serial data (SDI) in the GY-X2.
<table>
<tr><th>SHS2</th><th>SHS1</th><th>SHS3 = L</th><th>SHS3 = H</th></tr>
<tr><td>L</td><td>L</td><td>Normal</td><td>1/1000</td></tr>
<tr><td>L</td><td>H</td><td>1/100</td><td>1/2000</td></tr>
<tr><td>H</td><td>L</td><td>1/250</td><td>1/4000</td></tr>
<tr><td>H</td><td>L</td><td>1/500</td><td>1/8000</td></tr>
</table>
Every pin is internally pulled down.</td></tr>
<tr><td>3</td><td>SHS2</td><td>I</td><td>Shutter Speed Setting 2</td></tr>
<tr><td>4</td><td>SHS3</td><td>I</td><td>Shutter Speed Setting 3</td></tr>
<tr><td>5</td><td>TGM1</td><td>I</td><td>Store Mode Setting 1</td><td rowspan="2">Terminals for setting store (readout) mode. These are fixed for field readout in the GY-X2.
<table>
<tr><th>TGM1</th><th>TGM2</th><th>Store mode</th></tr>
<tr><td>L</td><td>L</td><td>Field</td></tr>
<tr><td>L</td><td>H</td><td>Inhibited</td></tr>
<tr><td>H</td><td>L</td><td>Pseudo field (only one line is read a field)</td></tr>
<tr><td>H</td><td>H</td><td>Frame</td></tr>
</table></td></tr>
<tr><td>6</td><td>TGM2</td><td>I</td><td>Store Mode Setting 2</td></tr>
<tr><td>7</td><td>INIT</td><td>I</td><td>Serial Interface Reset</td><td>Terminal to reset the serial interface to the initial state at power on (Reset by low level input). When the serial interface is not used, this level is fixed to low.</td></tr>
<tr><td>8</td><td>SCK</td><td>I</td><td>Serial Clock Input</td><td>Clock input terminal for input of shutter speed setting serial data.</td></tr>
<tr><td>9</td><td>SDT</td><td>I</td><td>Serial Data Input</td><td>Input terminal for shutter speed setting serial data</td></tr>
<tr><td>10</td><td>SRD</td><td>O</td><td>Serial Interface Ready Output</td><td>Output terminal of enable signal of serial data transmission to microprocessor, etc. Serial data transmission is enabled with low level output.</td></tr>
<tr><td>11</td><td>FI</td><td>O</td><td>Field Index</td><td>Output terminal of field discrimination pulse.
Low level output in the 1st field of NTSC or 1st and 3rd fields of PAL. High level output in the 2nd field of NTSC or 2nd and 4th fields of PAL.</td></tr>
<tr><td>12</td><td>VD</td><td>O</td><td>Vertical Drive</td><td>To output pulse at the beginning of every field. This pulse is used as the timing reference in the set.</td></tr>
<tr><td>13</td><td>SIND</td><td>O</td><td>Shutter Index</td><td>N-ch open drain output port to output low level in the normal mode.</td></tr>
<tr><td>14</td><td>TG</td><td>O</td><td>Transfer Gate Pulse</td><td>To output transfer gate drive pulse to read charges of photo cells by the vertical register.</td></tr>
<tr><td>15</td><td>V1</td><td>O</td><td>Vertical Transfer Pulse 1</td><td rowspan="4">To output CCD vertical register drive pulse to the CCD sensor through the inverter driver.</td></tr>
<tr><td>16</td><td>V2</td><td>O</td><td>Vertical Transfer Pulse 2</td></tr>
<tr><td>17</td><td>V3</td><td>O</td><td>Vertical Transfer Pulse 3</td></tr>
<tr><td>18</td><td>V4</td><td>O</td><td>Vertical Transfer Pulse 4</td></tr>
<tr><td>19</td><td>VSUB</td><td>O</td><td>Board Shutter Pulse</td><td>Output terminal of shutter pulse for VOD (Vertical Overflow Drain method) shutter operation of the CCD sensor</td></tr>
<tr><td>20</td><td>GND</td><td>O</td><td>Ground</td><td></td></tr>
<tr><td>21</td><td>VDD</td><td>O</td><td>Power Supply</td><td>+5 V power supply terminal</td></tr>
<tr><td>22</td><td>CS2</td><td>O</td><td>Color Sampling Pulse 2</td><td>To output sampling pulse for color separation sample holding. Color phase can be set by CSP1 (pin 33) and CSP2 (pin 32).
Color phase is different from CS1 at an angle of 180°.</td></tr>
<tr><td>23</td><td>CS1</td><td>O</td><td>Color Sampling Pulse 1</td><td>To output sampling pulse for color separation sample holding. Color phase can be set by CSP1 (pin 33) and CSP2 (pin 32).</td></tr>
<tr><td>24</td><td>TST8</td><td>—</td><td>Test Pin 8</td><td>Test pin pulled down internally. To be fixed at low level in general.</td></tr>
</table>

JCS0005

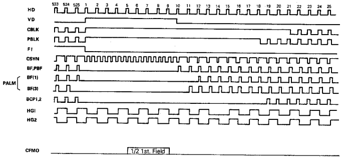
<table>
<tr><th>Pin No.</th><th>Symbol</th><th>I/O</th><th>Pin Name</th><th>Function</th></tr>
<tr><td>25</td><td>H2L</td><td>O</td><td>Horizontal Last Gate Transfer Pulse</td><td>Output terminal of horizontal drive pulse whose level is high during horizontal blanking period. This output is directly supplied to øH2L terminal of the CCD sensor.</td></tr>
<tr><td>26</td><td>H2</td><td>O</td><td>Horizontal Transfer Pulse 2</td><td>Output terminal of horizontal drive pulse whose level is high during horizontal blanking period. This output is directly supplied to øH2 terminal of the CCD sensor.</td></tr>
<tr><td>27</td><td>H1</td><td>O</td><td>Horizontal Transfer Pulse 1</td><td>Output terminal of horizontal drive pulse whose level is low during horizontal blanking period. This output is directly supplied to øH1 terminal of the CCD sensor.</td></tr>
<tr><td>28</td><td>MCK4</td><td>O</td><td>Main Clock 4</td><td>Output terminal of main clock</td></tr>
<tr><td>29</td><td>MCK3</td><td>O</td><td>Main Clock 3</td><td>Output terminal of main clock</td></tr>
<tr><td>30</td><td>MCK2</td><td>O</td><td>Main Clock 2</td><td>Output terminal of main clock</td></tr>
<tr><td>31</td><td>MCK1</td><td>O</td><td>Main Clock 1</td><td>Output terminal of main clock</td></tr>
<tr><td>32</td><td>CSP2</td><td>I</td><td>Color Sampling Phase Setting 1</td><td rowspan="2">For phase setting of output signals of CS1 (pin 23) and CS2 (pin 22). According to setting of these pins, clocks of MCK1 to MCK4 (pins 28 to 31) are output from CS2 and CS1.
<table>
<tr><th>CSP1</th><th>CSP2</th><th>CS1</th><th>CS2</th></tr>
<tr><td>L</td><td>L</td><td>MCK1</td><td>MCK1</td></tr>
<tr><td>L</td><td>H</td><td>MCK2</td><td>MCK2</td></tr>
<tr><td>H</td><td>L</td><td>MCK3</td><td>MCK3</td></tr>
<tr><td>H</td><td>H</td><td>MCK4</td><td>MCK4</td></tr>
</table></td></tr>
<tr><td>33</td><td>CSP1</td><td>I</td><td>Color Sampling Phase Setting 2</td></tr>
<tr><td>34</td><td>R0</td><td>O</td><td>Horizontal Output Reset</td><td>Output terminal of CCD sensor output reset pulse. Output reset timing pulse of this terminal is added with DC component and is supplied to øR terminal of the CCD sensor. The polarity is positive.</td></tr>
<tr><td>35</td><td>TST6</td><td>—</td><td>Test Pin 6</td><td>Test terminal pulled down internally. Level is generally fixed to low.</td></tr>
<tr><td>36</td><td>HBLK</td><td>O</td><td>Horizontal Transfer Blanking</td><td>This output applies blanking to horizontal transfer pulse since CCD horizontal transfer register should be stopped every time it scans a line in the vertical transfer period.</td></tr>
<tr><td>37</td><td>PBLK</td><td>O</td><td>Pre-composit e Blanking</td><td>To output wider blanking than CBLK (pin 45) for the trailing edge</td></tr>
<tr><td>38</td><td>BCP1</td><td>O</td><td>Optical Black Clamping 1</td><td>To output pulse for clamping optical black of every sensor output line. Composite output with low level when effective pixel is absent in the blanking period.</td></tr>
<tr><td>39</td><td>BCP2</td><td>O</td><td>Optical Black Clamping 2</td><td>To output pulse for clamping optical black of every sensor output line. Composite output with low level when effective pixel is absent in the blanking period.</td></tr>
<tr><td>40</td><td>VDD</td><td>—</td><td>Power Supply</td><td>+5 V power supply terminal</td></tr>
<tr><td>41</td><td>GND</td><td>—</td><td>Ground</td><td>Grounding terminal</td></tr>
<tr><td>42</td><td>HG2</td><td>O</td><td>Horizontal Gate 2</td><td>Line discrimination signal output for color demodulation.
NTSC : To reset every 277 lines
CCIR : To reset every 322 lines
(Make sure that this is not inversion pulse of HG1.)</td></tr>
<tr><td>43</td><td>HG1</td><td>O</td><td>Horizontal Gate 1</td><td>Line discrimination signal output for color demodulation.
NTSC : To reset every 14 lines
CCIR : To reset every 9 lines</td></tr>
<tr><td>44</td><td>CINV</td><td>I</td><td>Color Separation Carrier Inversion</td><td>Input terminal to change over the phase of color separation pulses CS1 (pin 23) and CS2 (pin 22). This terminal is internally pulled up and generally connected with HG1 output (pin 43).</td></tr>
</table>

Pin No.	Symbol	I/O	Pin Name	Function
45	CBLK	O	Composite Blanking	To output pulse to be used for video blanking in the encoder. NTSC : H : 11.01 µs, V : 20 H blanking CCIR : H : 12.02 µs, V : 25 H blanking
46	ENCP	O	Encoder Clamping	Pulse output for DC component reproduction in the encoder. 1H period continuous pulse.
47	HD	O	Horizontal Drive Pulse Output	To output pulse synchronizing with the beginning of every line. To be used as horizontal reference pulse in the set.
48	CSYN	O	Composite Sync. Signal	Standard composite sync. signal for NTSC and CCIR systems. NTSC : Conforms to RS-170 PAL : Conforms to CCIR SECAM : Conforms to CCIR
49	PBF	O	Pre-burst Flag Pulse Output	NTSC, PAL : To output signal whose timing is faster than BF output (pin 50). SECAM : To output IDP pulse to insert scan line discrimination signal in the vertical blanking period.
50	BF	O	Burst Flag Pulse Output	Output pulse to form and insert burst signal in the color encoder. SECAM : SCBL
51	LSW	O	Line Switch	Output of line discrimination signal. In the event of internal synchronization, level is low at the 1st line of the 1st field.
52	LRST	I	Line Switch Reset	External reset signal input to reset LSW output (pin 51) in case of external synchronization. This terminal is internally pulled up.  Be sure that phase and pulse width are equalized to burst flag.
53	LCNT	I	Line Switch Control	Timing control signal input for generating line switch signal in external synchronization. This terminal is internally pulled down.
54	CFMO	O	Color Frame Output	Pulse output at the beginning of every color frame. Period is 4 fields for NTSC or 8 fields for CCIR.
55	FMP	O	Frame Pulse Output	Output terminal of color frame discrimination signal for try state.
56	TVM2	I		Terminals for TV mode setting TVM1 | TVM2 | TV mode L | L | NTSC L | H | PAL-M H | L | PAL H | H | SECAM
57	TVM	I		
58	SDLY	I	System Delay Switching	To switch system delay time.
59	SRMD	I	Serial Interface Operation Mode	To switch receiving period of serial interface. L : Vertical blanking period H : Always
60	GND	—	Ground	Ground terminal
61	VDD	—	Power Supply	+5 V power supply terminal
62	NC	—	Non-contact	Non-contact terminal. To be open.
63	TST1	I	Test Pin 1	Test terminal pulled down internally. Generally fixed to low level.
64	SSMD	I	Smear Sweep Mode Setting	To determine smear sweep or not. Low level : Inactivated High level : Activated This terminal is internally pulled down.

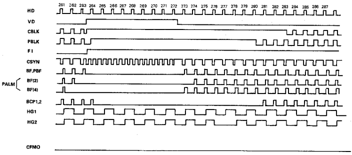
Pin No.	Symbol	I/O	Pin Name	Function
65	TST2	—	Test Pin 2	Test terminals which are pulled down internally.
66	TST3	—	Test Pin 3	
67	TST4	—	Test Pin 4	
68	TST5	—	Test Pin 5	
69	TST7	—	Test Pin 7	
70	HSYC	O	Horizontal Sync. Signal	
71	CPI	I	Comparison Clock Input	Input terminal of phase comparator. To detect rise of input signal.
72	VRI	I	External V. Sync. Signal Input	Input terminal of vertical sync. signal for external synchronization. To detect fall of signal. Internal pull-up terminal for Schmitt trigger input.
73	RPI	I	External H. Sync Signal Input	Input terminal of horizontal sync. signal for external synchronization. To detect rise of signal. Internal pull-up terminal for Schmitt trigger input.
74	PBTH	I	Synchronizing System Switch	Internal pull-down terminal to switch synchronizing system. Low level : Internal synchronization High level : External synchronization
75	EOO	O	Phase Detector Output	Output terminal of phase comparison between CSYN horizontal sync. signal component and RPI input signal. To detect leading edge of horizontal sync signal.
76	TST9	—	Test Pin 9	Test terminals which are internally pulled down.
77	TSTA	—	Test Pin A	
78	OSCI	I	Oscillation Input	Input terminal for internal oscillation circuit.
79	OSCO	O	Oscillation Output	Output terminal for internal oscillation circuit. Frequency of oscillation output is double of horizontal drive frequency.
80	VDD	—	Power Supply	+5 V power supply terminal

NTSC V. TIMMING

1st field

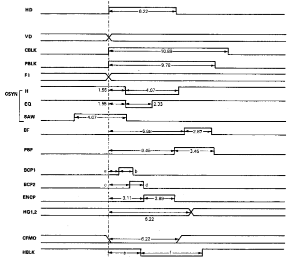

523 524 525 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
HD
VD
CBLK
PBLK
FI
CSYN
BF,PBF
PALM
BF(1)
BF(3)
BCP1,2
HGI
HG2
CFMO
1/2 1st. Field

2nd field


261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287
HD
VD
CBLK
PBLK
FI
CSYN
BF,PBF
PALM
BF(2)
BF(4)
BCP1,2
HG1
HG2
CFMO

NTSC H. TIMMING

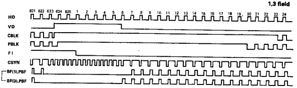
(unit : μsec)

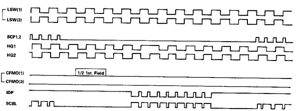

HD
6.22
VD
CBLK
10.89
PBLK
9.76
FI
CSYN
H
1.55
4.67
EQ
1.55
2.33
SAW
4.67
BF
6.88
2.67
PBF
6.45
3.46
BCP1
a
b
BCP2
c
d
ENCP
3.11
2.89
HG1,2
6.22
CFMO
6.22
HBLK
e
f

	SDLY=L	SDLY=H
a	0.78	1.29
d	1.11	1.11
c	1.56	2.07
d	1.11	1.11
e	2.44	2.96
f	6.36	6.36

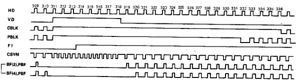
PAL V. TIMMING

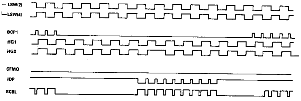
1,3 field


621 622 623 624 625 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
HD
VD
CBLK
PBLK
FI
CSYN
BF(1),PBF
BF(3),PBF

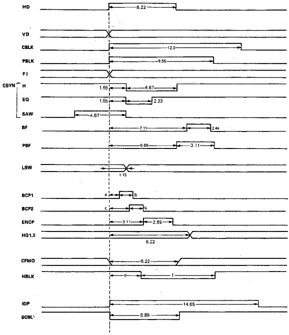

LSW(1)
LSW(3)
BCP1,2
HG1
HG2
CFMO(1)
CFMO(3)
1/2 1st. Field
IDP
SCBL

2,4 field


309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336
HD
VD
CBLK
PBLK
FI
CSYN
BF(2),PBF
BF(4),PBF

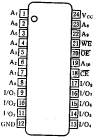

LSW(2)
LSW(4)
BCP1
HG1
HG2
CFMO
IDP
SCBL

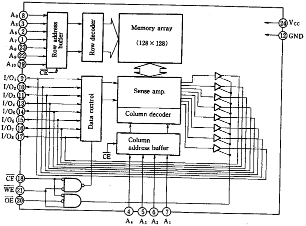
PAL H. TIMMING


HD
6.22
VD
CBLK
12.0
PBLK
9.56
F I
CSYN
H
1.55
4.67
EQ
1.55
2.33
SAW
4.67
BF
7.11
2.44
PBF
6.68
3.11
LSW
1.15
BCP1
a
b
BCP2
c
c
ENCP
3.11
2.89
HG1,2
6.22
CFMO
6.22
HBLK
e
f
IDP
14.65
SCBL\
6.89

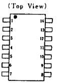
	SDLY=L	SDLY=H
a	0.78	1.29
d	1.11	1.11
c	1.56	2.07
d	1.11	1.11
e	2.44	2.96
f	6.81	6.81

■ LH5116NA-10 【SHARP】
(C-Mos 16K Static RAM)

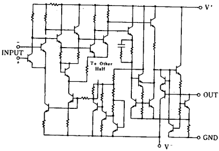

A7 1
A6 2
A5 3
A4 4
A3 5
A2 6
A1 7
A0 8
I/O1 9
I/O2 10
I/O3 11
GND 12
24 Vcc
23 A8
22 A9
21 WE
20 OE
19 A10
18 CE
17 I/O8
16 I/O7
15 I/O6
14 I/O5
13 I/O4


A0 8
A5 3
A6 2
A7 1
A8 23
A9 22
A10 19
Row address buffer
Row decoder
Memory array
(128 × 128)
CE
I/O1 9
I/O2 10
I/O3 11
I/O4 13
I/O5 14
I/O6 15
I/O7 16
I/O8 17
Data control
Sense amp.
Column decoder
Column address buffer
CE
CE 18
WE 21
OE 20
4 5 6 7
A4 A3 A2 A1
24 Vcc
12 GND

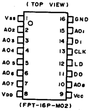
■ LM319M 【TEXAS】
(Voltage Comparator)

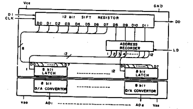

(Top View)
1
2
3
4
5
6
7
14
13
12
11
10
9
8

1	NC
2	NC
3 (2)	GND 1
4 (3)	+INPUT
5 (4)	−INPUT
6 (5)	V⁻
7 (6)	OUTPUT 2
8 (7)	GND 2
9 (8)	+INPUT 2
10(9)	−INPUT 2
11(10)	V⁺
12(1)	OUTPUT 1
13	NC
14	NC

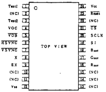

V⁺
INPUT
−
+
To Other Half
OUTPUT
GND
V⁻

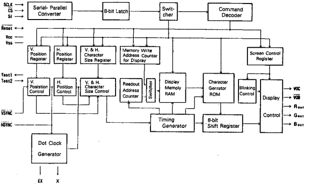
■ MB88342PF 【FUJITSU】
(D/A Converter)


(TOP VIEW)
Vss 1
AO2 2
AO3 3
AO4 4
AO5 5
AO6 6
AO7 7
VDD 8
16 GND
15 AO1
14 DI
13 CLK
12 LD
11 DO
10 AO8
9 Vcc
(FPT-16P-M02)

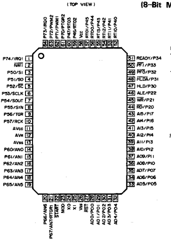

Vcc
GND
DI
CLK
12 bit SIFT RESISTOR
D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11
DO
8
ADDRESS RECORDER
LD
1 2 3 4 12
12
D0 D7
1
8 bit LATCH
12
D0 D7
8 bit LATCH
8 bit D/A CONVERTOR
8 bit D/A CONVERTOR
VDD
AO1
AO8
Vss

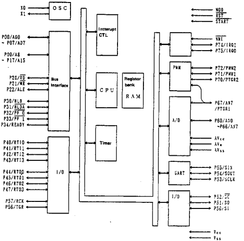
■ MB89012-109 〔FUJITSU〕
(TV Display Controler)


TOP VIEW
Test1 1
(NC) 2
Test2 3
VOC 4
VOB 5
HSYNC 6
VSYNC 7
X 8
EX 9
(NC) 10
(NC) 11
Vss 12
Vcc 24
Reset 23
(NC) 22
CS 21
SCLK 20
SI 19
Bout 18
Gout 17
Rout 16
(NC) 15
(NC) 14
(NC) 13

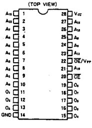

SCLK
CS
SI
Reset
Vcc
Vss
Test1
Test2
VSYNC
HSYNC
Serial- Parallel Converter
8-bit Latch
Swit-cher
Command Decoder
V. Position Register
H. Position Register
V. & H. Character Size Register
Memory Write Address Counter for Dispray
Screen Control Register
V. Posistion Control
H. Position Control
V. & H. Charecter Size Control
Readout Address Counter
Switcher
Display Memoly RAM
Character Genrator ROM
Blinking Control
Display Control
VOC
VOB
Rout
Gout
Bout
Timing Generator
8-bit Shift Register
Dot Clock Generator
EX
X

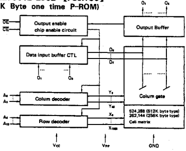
■ MB89T715APF 〔FUJITSU〕
(8-Bit Micro Computer)


(TOP VIEW)
P74/IRQ1 1
NMI 2
P50/SI 3
P51/SO 4
P52/SC 5
P53/SCLK 6
P54/SOUT 7
P55/SIN 8
P56/TGR 9
P57/RCK 10
AVcc 11
AVR 12
AVss 13
P60/AN0 14
P61/AN1 15
P62/AN2 16
P63/AN3 17
P64/AN4 18
P65/AN5 19
P66/AN6 20
P67/AN7/RTGR1 21
START 22
MOD 23
X0 24
X1 25
Vss 26
RST 27
AD0/P00 28
AD1/P01 29
AD2/P02 30
AD3/P03 31
AD4/P04 32
AD5/P05 33
AD6/P06 34
AD7/P07 35
A08/P10 36
A09/P11 37
A10/P12 38
A11/P13 39
A12/P14 40
A13/P15 41
A14/P16 42
A15/P17 43
RD/P20 44
WR/P21 45
ALE/P22 46
HLD/P30 47
HLDA/P31 48
PF0/P32 49
PF1/P33 50
READY/P34 51
RTI0/P40 52
RTI1/P41 53
RTI2/P42 54
RTI3/P43 55
RTO0/P44 56
RTO1/P45 57
Vcc 58
P46/RTO2 59
P47/RTO3 60
P70/PTGR2 61
P71/PWM1 62
P72/PWM2 63
P73/IRQ0 64

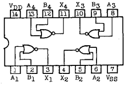

X0
X1
OSC
P00/AD0
~ P07/AD7
P00/A8
~ P17/A15
P20/RD
P21/WR
P22/ALE
P30/HLD
P31/HLDA
P32/PF 0
P33/PF 1
P34/READY
Bus Interface
P40/RTI0
P41/RTI1
P42/RTI2
P43/RTI3
P44/RT00
P45/RT01
P46/RT02
P47/RT03
P57/RCK
P56/TGR
I/O
Intterupt CTL
CPU
Registor bank
RAM
Timer
MOD
RST
START
NMI
P74/IRQ1
P75/IRQ0
PWM
P72/PWM2
P71/PWM1
P70/PTGR2
A/D
P67/AN7
/PTGR1
P60/AN0
~P66/AN7
AVcc
AVR
AVss
UART
P55/SIN
P54/SOUT
P53/SCLK
I/O
P52/SC
P51/SO
P50/SI
Vcc
Vss

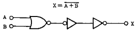
■ MBM27C512-20CZ 〔FUJITSU〕
(512K Byte one time P-ROM)


(TOP VIEW)
A15 1
A12 2
A7 3
A6 4
A5 5
A4 6
A3 7
A2 8
A1 9
A0 10
O1 11
O2 12
O3 13
GND 14
Vcc 28
A14 27
A13 26
A8 25
A9 24
A11 23
OE/VPP 22
A10 21
CE 20
O8 19
O7 18
O6 17
O5 16
O4 15

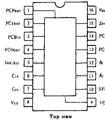

O1
O8
OE
CE
Output enable chip enable circuit
Output Buffer
Data input buffer CTL
D0
D7
O1
O8
A0
A3
Colum decoder
Y0
Y63
Colum gate
A4
A15
Row decoder
X0
X1023
524,288 (512K byte type)
262,144 (256K byte type)
Cell matrix
Vcc
VPP
GND

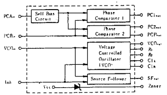
■ MC14001BFL 【MOTOROLA】
(Dual 2 Input NOR Gate)


VDD A4 B4 X4 X3 B3 A3
14 13 12 11 10 9 8
1 2 3 4 5 6 7
A1 B1 X1 X2 B2 A2 VSS

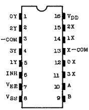

X = $\overline{A+B}$
A
B
X

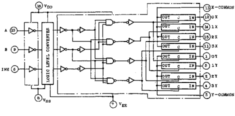
■ MC14046BF 【MOTOROLA】
(Phase Locked Loop)


PCPout 1
PC1out 2
PCBin 3
VCOout 4
Inhibit 5
C1A 6
C1B 7
VSS 8
16 VDD
15 Zener
14 PCAin
13 PC2out
12 R2
11 R1
10 SFout
9 VCOin
Top view


PCAin
PCBin
VCOin
Inh
Self Bias Circuit
Phase Comparator 1
Phase Comparator 2
Voltage Controlled Oscillator (VCO)
Source Follower
VSS
PC1out
PC2out
PCPout
VCOout
R1
R2
C1A
C1B
SFout
Zener

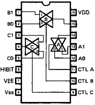
■ MC14052BF 【MOTOROLA】
(Dual 4 Channel Analog Multiplexers/Demultiplexers)


0Y 1
2Y 2
Y-COM 3
3Y 4
1Y 5
INH 6
VEE 7
VSS 8
16 VDD
15 2X
14 1X
13 X-COM
12 0X
11 3X
10 A
9 B


16 VDD
A 10
B 9
INH 6
LOGIC LEVEL CONVERTER
OUT C IN
13 X-COMMON
12 0X
14 1X
15 2X
11 3X
1 0Y
5 1Y
2 2Y
4 3Y
3 Y-COMMON
8 VSS
7 VEE

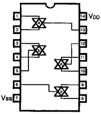
CONTROL INPUTS			"ON" CHANNEL
INHIBIT	B	A	TC4052BP TC4052BF
L	L	L	0X、0Y
L	L	H	1X、1Y
L	H	L	2X、2Y
L	H	H	3X、3Y
L	L	L	—
L	L	H	—
L	H	L	—
L	H	H	—
H	※	※	NONE
※ Don't Care			

■ MC14053BF 【MOTOROLA】
(Triple 2 Channel Analog Multiplexers/ Demultiplexers)

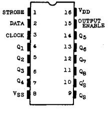

B1 1
B0 2
C1 3
4
C0 5
INHIBIT 6
VEE 7
Vss 8
16 VDD
15
14
13 A1
12 A0
11 CTL A
10 CTL B
9 CTL C
A
B
C

CONTROL VOLTAGE : $V_{SS} \leq (V_{CTL\ A}, V_{CTL\ B}, V_{CTL\ C}) \leq V_{DD}$
INPUT VOLTAGE : $V_{EE} \leq (V_{A1}, V_{A0}, V_{B1}, V_{B0}, V_{C1}, V_{C0}) \leq V_{DD}$

■ MC14066BF 【MOTOROLA】
(Quad Analog Switch/Multiplexer)

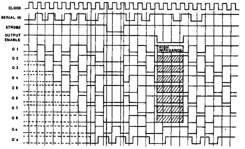

1
2
3
4
5
6
Vss 7
14 VDD
13
12
11
10
9
8
A
B
C
D

■ MC14094BF 【MOTOROLA】
(8 Stage Bus Compatible Shift/Store Register)

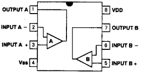

STROBE 1
DATA 2
CLOCK 3
Q1 4
Q2 5
Q3 6
Q4 7
VSS 8
16 VDD
15 OUTPUT ENABLE
14 Q5
13 Q6
12 Q7
11 Q8
10 Q'S
9 QS

CK	OE	ST	SI	PARA.OUT		SERI.OUT	
				Q1	Qn	Qs	Q's
↑	H	H	L	L	Qn-1	Q7	NC
↑	H	H	H	H	Qn-1	Q7	NC
↑	H	L	•	NC	NC	Q7	NC
↑	L	•	•	Z	Z	Q7	NC
↓	H	•	•	NC	NC	NC	Q8
↓	L	•	•	Z	Z	NC	Q8

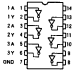
X : DON'T CARE
NC : NO CHANGE
Z : HIGH IMPEDANCE


CLOCK
SERIAL IN
STROBE
OUTPUT ENABLE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Qs
Q's
HIGH IMPEDANCE

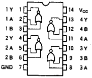
■ MC14577AF 〔MOTOROLA〕
(Dual Op.Amp)


OUTPUT A 1
INPUT A − 2
INPUT A + 3
Vss 4
8 VDD
7 OUTPUT B
6 INPUT B −
5 INPUT B +
A
B

■ MC74AC04M 〔MOTOROLA〕
(Hex Inverter)


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y

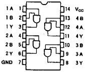
■ MC74HC02AF 〔MOTOROLA〕
(Quad 2–Input Positive–NOR Gates)


1Y 1
1A 2
1B 3
2Y 4
2A 5
2B 6
GND 7
14 Vcc
13 4Y
12 4B
11 4A
10 3Y
9 3B
8 3A

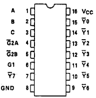
(TOP VIEW)

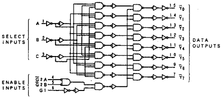
■ MC74HC04AF 〔MOTOROLA〕
(See MC74AC04M.)

■ MC74HC08AF 〔MOTOROLA〕
(Quad 2–Input Positive–AND Gates)


1A 1
1B 2
1Y 3
2A 4
2B 5
2Y 6
GND 7
14 Vcc
13 4B
12 4A
11 4Y
10 3B
9 3A
8 3Y

■ MC74HC138AF 〔MOTOROLA〕
(3–Line to 8–Line Decoders/ Demultiplexers)

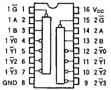

A 1
B 2
C 3
G2A 4
G2B 5
G1 6
Y7 7
GND 8
16 Vcc
15 Y0
14 Y1
13 Y2
12 Y3
11 Y4
10 Y5
9 Y6

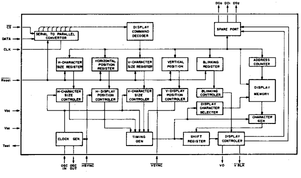

SELECT INPUTS
A 1
B 2
C 3
ENABLE INPUTS
G2A 4
G2B 5
G1 6
15 Y0
14 Y1
13 Y2
12 Y3
11 Y4
10 Y5
9 Y6
7 Y7
DATA OUTPUTS

INPUTS						OUTPUTS								SELECTED OUTPUT
ENABLE			SELECT											
G1	$\overline{G2A}$	$\overline{G2B}$	C	B	A	$\overline{Y0}$	$\overline{Y1}$	$\overline{Y2}$	$\overline{Y3}$	$\overline{Y4}$	$\overline{Y5}$	$\overline{Y6}$	$\overline{Y7}$	
L	X	X	X	X	X	H	H	H	H	H	H	H	H	NONE
X	H	X	X	X	X	H	H	H	H	H	H	H	H	NONE
X	X	H	X	X	X	H	H	H	H	H	H	H	H	NONE
H	L	L	L	L	L	L	H	H	H	H	H	H	H	$\overline{Y0}$
H	L	L	L	L	H	H	L	H	H	H	H	H	H	$\overline{Y1}$
H	L	L	L	H	L	H	H	L	H	H	H	H	H	$\overline{Y2}$
H	L	L	L	H	H	H	H	H	L	H	H	H	H	$\overline{Y3}$
H	L	L	H	L	L	H	H	H	H	L	H	H	H	$\overline{Y4}$
H	L	L	H	L	H	H	H	H	H	H	L	H	H	$\overline{Y5}$
H	L	L	H	H	L	H	H	H	H	H	H	L	H	$\overline{Y6}$
H	L	L	H	H	H	H	H	H	H	H	H	H	L	$\overline{Y7}$

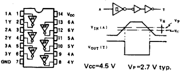
X : DONT' CARE

■ MC74HC139AF 〔MOTOROLA〕
(Dual 2–Line to 4–Lile Decoders/ Demultiplexers)


1G 1
1A 2
1B 3
1Y0 4
1Y1 5
1Y2 6
1Y3 7
GND 8
16 Vcc
15 2G
14 2A
13 2B
12 2Y0
11 2Y1
10 2Y2
9 2Y3

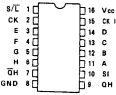

DO0 DO1 DO2
CS
DATA
CLK
Reset
Vcc
Vss
Test
SERIAL TO PARALLEL CONVERTOR
DISPLAY COMMAND DECODER
SPARE PORT
H-CHARACTER SIZE REGISTER
HORIZONTAL POSITION REGISTER
V-CHARACTER SIZE REGISTER
VERTICAL POSITION
BLINKING REGISTER
ADDRESS COUNTER
H-CHARACTER SIZE CONTROLER
H-DISPLAY POSITION CONTROLER
V-CHARACTER SIZE CONTROLER
V-DISPLAY POSITION CONTROLER
BLINKING CONTROLER
DISPLAY MEMORY
DISPLAY CHARACTER SELECTER
CHARACTER GEN
CLOCK GEN.
TIMING GEN
SHIFT REGISTER
DISPLAY CONTROLER
OSC IN
OSC OUT
HSYNC
VSYNC
VO
V BLK

■ MC74HC14AF 【MOTOROLA】
(Hex Schmitt-Trigger Inverters)


1A 1
1Y 2
2A 3
2Y 4
3A 5
3Y 6
GND 7
14 Vcc
13 6A
12 6Y
11 5A
10 5Y
9 4A
8 4Y
A
Y
VIN(A)
VOUT(Y)
VH
VP
VN

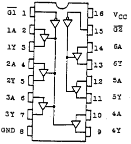
Vcc=4.5 V V_P=2.7 V typ.
V_N=1.6 V typ.

■ MC74HC165F 【MOTOROLA】
(Parallel-Load 8-Bit Shift Registers With Complementary Outputs)

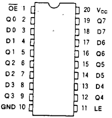

S/L̄ 1
CK 2
E 3
F 4
G 5
H 6
Q̄H 7
GND 8
16 Vcc
15 CK INH
14 D
13 C
12 B
11 A
10 SI
9 QH

INPUTS					INTERNAL OUTPUTS		OUTPUTS	
SHIFT/LOAD	CLOCK INH	CLOCK	SERIAL IN	PARALLEL A……H	QA	QB	QH	$\overline{QH}$
L	X	X	X	a……h	a	b	h	h
H	L	↑	H	X	H	QAn	QGn	QGn
H	L	↑	L	X	L	QAn	QGn	QGn
H	↑	L	H	X	H	QAn	QGn	QGn
H	↑	L	L	X	L	QAn	QGn	QGn
H	X	H	X	X	No change			
H	H	X	X	X	No change			

■ MC74HC367F 【MOTOROLA】
(Hex Bus Drivers With 3-State NON-Inverted Output)


G̅1 1
1A 2
1Y 3
2A 4
2Y 5
3A 6
3Y 7
GND 8
16 Vcc
15 G̅2
14 6A
13 6Y
12 5A
11 5Y
10 4A
9 4Y

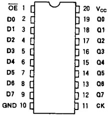
■ MC74HC373AF 【MOTOROLA】
(Octal D-Type Transparent Latches With 3-State Output)


OE 1
Q0 2
D0 3
D1 4
Q1 5
Q2 6
D2 7
D3 8
Q3 9
GND 10
20 Vcc
19 Q7
18 D7
17 D6
16 Q6
15 Q5
14 D5
13 D4
12 Q4
11 LE

INPUTS			OUTPUTS	
$\overline{OE}$	LE	D	Q(373A)	$\overline{Q}$(533A)
H	X	X	Z	Z
L	L	X	Q_n	$\overline{Q}_n$
L	H	L	L	H
L	H	H	H	L

X : Dont Care
Z : High Impedance
Qn ($\overline{Q}$n) : The level of Q ($\overline{Q}$) wich is just before "LE" terminal is changed from "H" to "L".

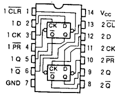
■ MC74HC574AF 【MOTOROLA】
(Octal D-Type EDGE-Trigger Flip-Flops With 3-State (NON-Inverted Outputs))


OE 1
D0 2
D1 3
D2 4
D3 5
D4 6
D5 7
D6 8
D7 9
GND 10
20 Vcc
19 Q0
18 Q1
17 Q2
16 Q3
15 Q4
14 Q5
13 Q6
12 Q7
11 CK

INPUTS			OUTPUTS	
$\overline{OE}$	CK	D	Q(T574A)	$\overline{Q}$(T564A)
H	X	X	Z	Z
L	↓	X	Q_n	$\overline{Q_n}$
L	↑	L	L	H
L	↑	H	H	L

X : Dont Care
Z : High Impedance
Qn ($\overline{Q}$n) : No Change

■ MC74HC74AF 【MOTOROLA】
(Dual D-Type Positive-EDGE-Triggered Flip-Flops With Preset AND Clear)

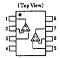

1 CLR 1
1 D 2
1 CK 3
1 PR 4
1 Q 5
1 Q̄ 6
GND 7
14 Vcc
13 2 CLR
12 2 D
11 2 CK
10 2 PR
9 2 Q
8 2 Q̄
CK D
Q̄ Q
CK D
Q̄ Q

(TOP VIEW)

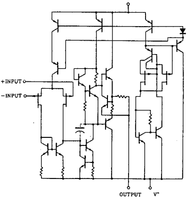
INPUTS				OUTPUTS		FUNCTION
$\overline{CLR}$	$\overline{PR}$	D	CK	Q	$\overline{Q}$	
L	H	X	X	L	H	CLEAR
H	L	X	X	H	L	PRESET
L	L	X	X	H	H	—
H	H	L	↑	L	H	—
H	H	H	↑	H	L	—
H	H	X	↓	Q_n	$\overline{Q}_n$	NO CHANGE

X : Don't care

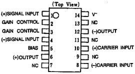
■ NJM062M 〔JRC〕
(J-Input Op.Amplifier)

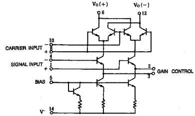

(Top View)
1
2
3
4
8
7
6
5

1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

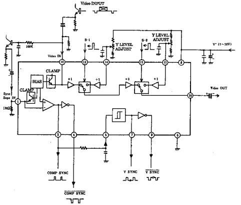

V⁺
+INPUT
−INPUT
OUTPUT
V⁻

■ NJM1496M 〔JRC〕
(Balanced Modulator)

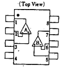

(Top View)
(+)SIGNAL INPUT 1
GAIN CONTROL 2
GAIN CONTROL 3
(−)SIGNAL INPUT 4
BIAS 5
(+)OUTPUT 6
NC 7
14 V⁻
13 NC
12 (−)OUTPUT
11 NC
10 (+)CARRIER INPUT
9 NC
8 (−)CARRIER INPUT


Vo(+)
Vo(−)
6
12
CARRIER INPUT
10
8
SIGNAL INPUT
4
1
2
3
GAIN CONTROL
BIAS 5
V⁻ 14

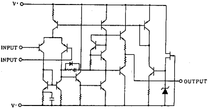
■ NJM2207S 〔JRC〕
(Video Super imposer)


Video INPUT
100K
Video IN
S-1
Y LEVEL ADJUST
S-2
Y LEVEL ADJUST
V⁺ (5~12V)
CLAMP
BIAS
CLAMP
+1
+1
+1
+1
Sync Sepa IN
1MΩ
Video OUT
16
13
14
12
11
8
1
10
3
4
5
7
9
6
COMP SYNC
V SYNC
V SYNC
COMP SYNC

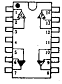
■ NJM2068MD 〔JRC〕
(Low-Noise Dual Op.Amplifier)


(Top View)
1
2
3
4
8
7
6
5
A
B

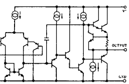
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺


V⁺
−INPUT
+INPUT
OUTPUT
V⁻

■ NJM2902M 〔JRC〕
(Quad Single Supply Op.Amplifier)

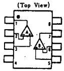

(Top View)
1
2
3
4
5
6
7
14
13
12
11
10
9
8

1.A OUTPUT	8.C OUTPUT
2.A−INPUT	9.C−INPUT
3.A+INPUT	10.C+INPUT
4.V⁺	11.GROUND
5.B+INPUT	12.D+INPUT
6.B−INPUT	13.D−INPUT
7.B OUTPUT	14.D OUTPUT

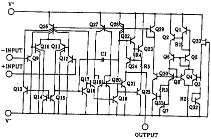

−INPUT
+INPUT
V⁺
OUTPUT
GND

■ NJM2904M 【JRC】
(Dual Single Supply Op.Amplifier)

(Top View)

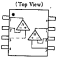

1
2
3
4
5
6
7
8
A
B

1 . A OUTPUT
2 . A−INPUT
3 . A+INPUT
4 . GND
5 . B+INPUT
6 . B−INPUT
7 . B OUTPUT
8 . V^+

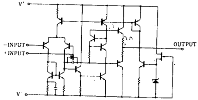

V+
−INPUT
+INPUT
V−
OUTPUT
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q29
Q30
Q31
Q32
Q33
R1
R2
R3
R4
R5
C1

■ NJM4560MD 【JRC】
(Dual Op.Amplifier)

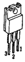
(Top View)


1
2
3
4
5
6
7
8
A
B

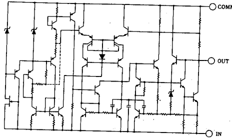
1 . A OUTPUT
2 . A−INPUT
3 . A+INPUT
4 . V^-
5 . B+INPUT
6 . B−INPUT
7 . B OUTPUT
8 . V^+


V+
−INPUT
+INPUT
V−
OUTPUT

■ NJM79M05FA 【JRC】
(3-Terminal Negative Voltage Regulator
(−5V))

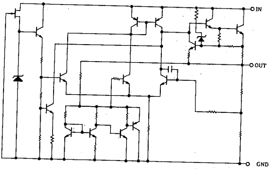


1 . OUT
2 . IN
3 . COMMON


COMMON
OUT
IN

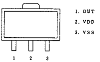
■ RC78L05UA 【RAYTHEON】
(3-Terminal Positive Voltage Regulator
(+5V))

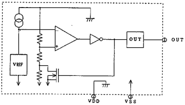
1 . OUT
2 . GND



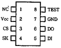
■ RC78L15UA 【RAYTHEON】
(See RC78L05UA.)

■ S-8054HNCB 【SEIKO】
(Voltage Detecter)

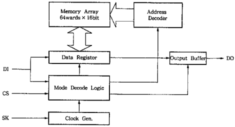

1. OUT
2. VDD
3. VSS
1
2
3


VREF
OUT
① OUT
② VDD
③ VSS

■ S-2914ARF10 【SEIKO】
(1K-Bit Serial EE P ROM)


NC 1
Vcc 2
CS 3
SK 4
8 TEST
7 GND
6 DO
5 DI

PIN No.	SIGNAL	PIN No.	SIGNAL
1	No Connect	5	Serial Data Input
2	Vcc (+5V)	6	Serial Data Output
3	Chip Select	7	GND (0V)
4	Serial Clock	8	No Connect


Memory Array
64wards × 16bit
Address
Decoder
Data Registor
Output Buffer
DO
DI
Mode Decode Logic
CS
SK
Clock Gen.

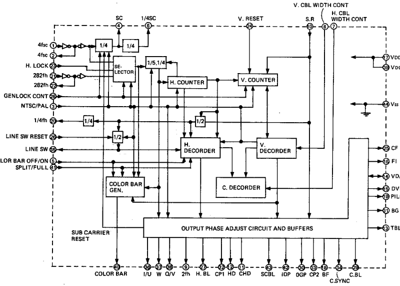
■ SCV2241-001 【FUJI ELECTRIC】
(+5V DC-DC Convertor)

TOP VIEW

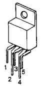
PIN ASSIGNMENT

G	GND
OUT	V OUTPUT
IN	V INPUT

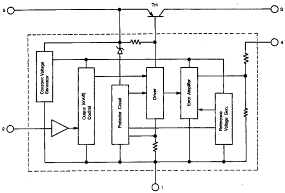
■ SCV0322-002 【JVC】
(SSG)


V. CBL WIDTH CONT
H. CBL WIDTH CONT
SC ④
1/4SC ⑥
V. RESET ㉔
S.R ⑩
⑧
⑦
4fsc ①
4fsc ②
H. LOCK ㉓
282fh ㉑
282fh ㉒
GENLOCK CONT ㉘
NTSC/PAL ③
1/4fh ⑳
LINE SW RESET ㉖
LINE SW ㉟
COLOR BAR OFF/ON ⑤
SPLIT/FULL ㊶
1/4
1/4
SE-LECTOR
1/5,1/4
H. COUNTER
V. COUNTER
1/4
1/2
1/2
H. DECORDER
V. DECORDER
C. DECORDER
COLOR BAR GEN.
OUTPUT PHASE ADJUST CIRCUIT AND BUFFERS
SUB CARRIER RESET
⑰ VDD
㊴ VDD
㊹ Vss
㉕ CF
⑯ FI
⑭ VD/SP
⑮ DVD
⑲ PILOT P
㉛ BG P
⑬ TBL
㊵ COLOR BAR
㊱ I/U
㊲ W
㊳ Q/V
⑨ 2fh
㉗ H. BL
㉜ CP1
⑫ HD
⑪ CHD
㊸ SCBL
㊷ IDP
㉚ OGP
㉝ CP2
⑱ BF
㉞ C.SYNC
㉙ C.BL

■ SI-3090C 【SANKEN】
(Regulator)



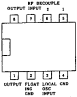
1. GND
2. Vc (on/off)
3. Vo
4. Vo sence
5. Vin

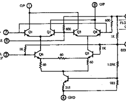

5
Tr1
3
4
2
1
Constant Voltage Generator
Output (on/off) Control
Protector Circuit
Driver
Error Amplifier
Reference Voltage Gen.

	MIN	TYP	MAX
· Input Voltage	10V		30V
· Output Voltage	8.64V	9.00V	9.36V

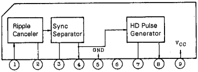
· Minimum Difference from Input Voltage to Output Voltage
0.5V (Output Current ≦ 1A)
1.0V (Output Current ≦ 1.5A)

■ SN76515P 【TEXAS】
(Double Balanced Mixer)

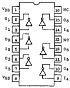

OUTPUT
RF INPUT
DECOUPLE 2
1
8
7
6
5
1
2
3
4
OUTPUT
FLOATING GND
LOCAL OSC INPUT
GND

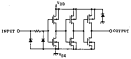

O/P ①
⑧ O/P
②
FLOATING GND
RF I/P ⑦
DE-COUPLE ⑥
LOCAL OSC I/P ③
Q1
Q2
Q3
Q4
Q5
Q6
600
600
1K
1K
1K
60
60
60
1.05K
980
215
⑤
DECOUPLE 1
④ GND

■ TA7357AP 【TOSHIBA】
(Sync Separator For H Timing)


Ripple Canceler
Sync Separator
HD Pulse Generator
GND
VCC
①
②
③
④
⑤
⑥
⑦
⑧
⑨

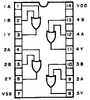
■ TC4049BF 【TOSHIBA】
(Hex Inverting Buffer)


VDD 1
O1 2
I1 3
O2 4
I2 5
O3 6
I3 7
VSS 8
16 NC
15 O6
14 I6
13 NC
12 O5
11 I5
10 O4
9 I4

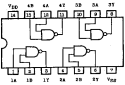

VDD
INPUT
OUTPUT
VSS

■ TC4066BF 【TOSHIBA】
(See MC14066BF.)

■ TC40H032F 【TOSHIBA】
(Quad 2-Input OR Gate)

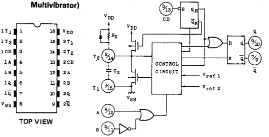

1A 1
1B 2
1Y 3
2A 4
2B 5
2Y 6
VSS 7
14 VDD
13 4B
12 4A
11 4Y
10 3B
9 3A
8 3Y

■ TC40H000F 【TOSHIBA】
(Quad 2-Input NAND Gate)

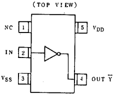

VDD
4B
4A
4Y
3B
3A
3Y
14
13
12
11
10
9
8
1
2
3
4
5
6
7
1A
1B
1Y
2A
2B
2Y
VSS

INPUTS		OUTPUT
A	B	Y
L	L	H
H	L	H
L	H	H
H	H	L

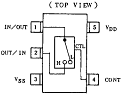
■ TC4538BF 〔TOSHIBA〕
(Dual Precision Monostable Multivibrator)

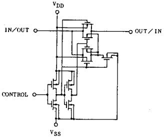

1T1
1T2
1CD
1A
1B
1Q
1Q̄
VSS
VDD
2T1
2T2
2CD
2A
2B
2Q
2Q̄
TOP VIEW
VDD
RX
T2 (2/14)
CX
T1 (1/15)
VDD
VSS
CONTROL CIRCUIT
Vref 1
Vref 2
(3/13) S QR
CD Q̄R
R Q (6/10) Q
S Q̄ (7/9) Q̄
A (4/12)
B (5/11)

■ TC4S69F 〔TOSHIBA〕
(Inverter Gate)


(TOP VIEW)
NC 1
IN 2
VSS 3
5 VDD
4 OUT Ȳ

■ TC4S66F 〔TOSHIBA〕
(Bilateral Switch)

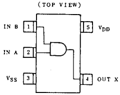

(TOP VIEW)
IN/OUT 1
OUT/IN 2
VSS 3
5 VDD
4 CONT
CTL
H
L


VDD
IN/OUT
OUT/IN
CONTROL
VSS

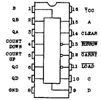
CONTROL	IMPEDANCE BETWEEN IN/OUT-OUT/IN *
H	0.5 ~ 5 × 10² Ω
L	> 10⁹ Ω

※ See Electrical Characteristics

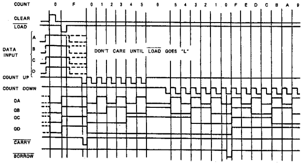
■ TC4S81F 〔TOSHIBA〕
(2-Input AND Gate)


(TOP VIEW)
IN B 1
IN A 2
VSS 3
5 VDD
4 OUT X

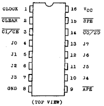
■ TC74HC193AF 〔TOSHIBA〕
(Synchronous 4-Bit Up/Down Binary Counters, Clock With Clear)

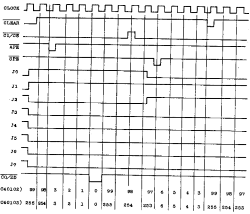

B 1
QB 2
QA 3
COUNT DOWN 4
COUNT UP 5
QC 6
QD 7
GND 8
16 VCC
15 A
14 CLEAR
13 BORROW
12 CARRY
11 LOAD
10 C
9 D

COUNT UP	COUNT DOWN	LOAD	CLEAR	FUNCTION
↑	H	H	L	COUNT UP
↓	H	H	L	NO COUNT
H	↑	H	L	COUNT DOWN
H	↓	H	L	NO COUNT
X	X	L	L	PRESET
X	X	X	H	RESET

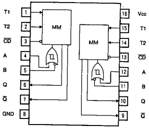


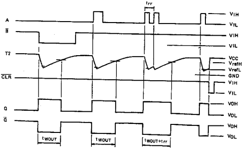
■ TC74HC40103AF 〔TOSHIBA〕
(8-Bit Binary Programmable Down Counter)


CLOCK 1
CLEAR 2
CI/CE 3
J0 4
J1 5
J2 6
J3 7
GND 8
16 VCC
15 SPE
14 CO/ZD
13 J7
12 J6
11 J5
10 J4
9 APE
(TOP VIEW)


CLOCK
CLEAR
CI/CE
APE
SPE
J0
J1
J2
J3
J4
J5
J6
J7
CO/ZD
(TC74HC40102) 99 98 3 2 1 0 99 98 97 6 5 4 3 99 98 97
(TC74HC40103) 255 254 3 2 1 0 255 254 253 6 5 4 3 255 254 253

■ TC74HC4538AF 〔TOSHIBA〕
(Dual Retriggerable Monostable Multivibrator)

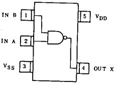

T1 1
T2 2
CD 3
A 4
B 5
Q 6
Q̄ 7
GND 8
16 Vcc
15 T1
14 T2
13 CD
12 A
11 B
10 Q
9 Q̄
MM
MM

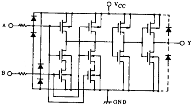

trr
A
B̄
T2
CLR
Q
Q̄
VIH
VIL
VIH
VIL
VCC
VrefH
VrefL
GND
VIH
VIL
VOH
VOL
VOH
VOL
tWOUT
tWOUT
tWOUT+trr

INPUT			OUTPUT		NOTE
A	$\overline{B}$	$\overline{CD}$	Q	$\overline{Q}$	
↑	H	H	⊓	⊔	OUTPUT ENABLE
X	L	H	L	H	INHIBIT
H	X	H	L	H	INHIBIT
L	↓	H	⊓	⊔	OUTPUT ENABLE
X	X	L	L	H	INHIBIT

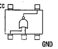
X:Don't Care

■ TC7S00F 〔TOSHIBA〕
(2-Input Nand Gate)

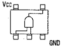

IN B 1
IN A 2
VSS 3
5 VDD
4 OUT X



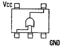
■ TC7S02F 【TOSHIBA】
(2 Input Single NOR Gate)



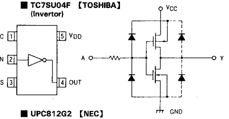
■ TC7S08F 【TOSHIBA】
(2 Input Single AND Gate)



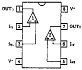
■ TC7S32F 【TOSHIBA】
(2 Input Single OR Gate)



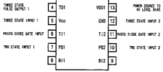
■ TC7SU04F 【TOSHIBA】
(Invertor)

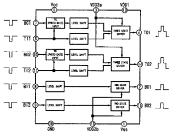

NC 1
IN 2
Vss 3
5 VDD
4 OUT
Vcc
A
Y
GND

■ UPC812G2 【NEC】
(Op.Amp.)

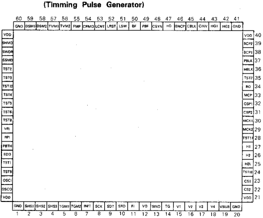

OUT1 1
II1 2
IN1 3
V- 4
8 V+
7 OUT2
6 II2
5 IN2
1
2

■ UPD16501GS 【NEC】
(CCD Driver)


1 Vss
TWO STATE PULSE OUTPUT 2 BO1
MIDDLE LEVEL BIAS FOR THREE STATE PULSE 3 VDD2a
THREE STATE PULSE OUTPUT 1 4 TO1
THREE STATE INPUT 1 5 Vcc
PHOTO DIODE GATE INPUT 6 TI1
TWO STATE INPUT 1 7 PG1
8 BI1
VDD2b 16 MIDDLE LEVEL BIAS FOR TWO STATE PULSE
BO2 15 TWO STATE PULSE OUTPUT
TO2 14 THREE STATE PULSE OUTPUT 2
VDD1 13 POWER SOURCE TO HI LEVEL BIAS
GND 12 THREE STATE INPUT 2
TI2 11 PHOTO DIODE GATE INPUT 2
PG2 10 TWO STATE INPUT 2
BI2 9


Vcc ⑤
VDD2a ③
VDD1 ⑬
BG1 ⑦
TI1 ⑥
BG2 ⑩
TI2 ⑪
BI1 ⑧
BI2 ⑨
PG (PHOTO GATE) INPUT
LEVEL SHIFT
THREE STATE DRIVER
TWO STATE DRIVER
④ TO1
⑭ TO2
② BO1
⑮ BO2
⑫ GND
⑯ VDD2b
① Vss

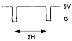
■ UPD9328AGK-BE9 【NEC】
(Timming Pulse Generator)


60 GND
59 DSM1
58 DSM2
57 TVM1
56 TVM2
55 FMP
54 CPMO
53 LCNT
52 LRST
51 LSW
50 BF
49 PBF
48 CSYN
47 HD
46 ENCP
45 CBLK
44 CINV
43 HG1
42 HG2
41 GND
61 VDD
62 SHMD
63 SWDR
64 SSMD
65 TST2
66 TST3
67 TST12
68 TST4
69 TST5
70 TST6
71 TST8
72 VRI
73 RPI
74 PBTH
75 EDO
76 TST1
77 TST9
78 OSCI
79 OSCO
80 VDD
40 VDD
39 BCP2
38 BCP1
37 PBLK
36 HBLK
35 TST7
34 RO
33 MCP
32 CSP1
31 CSP2
30 MCK1
29 MCK2
28 TST11
27 H1
26 H2
25 H2L
24 TST10
23 CS1
22 CS2
21 VDD
1 GND
2 SHS1
3 SHS2
4 SHS3
5 TGM1
6 TGM2
7 INFT
8 SCK
9 SDT
10 SRD
11 FI
12 VD
13 SIND
14 TG
15 V1
16 V2
17 V3
18 V4
19 VSUB
20 GND

● **Pin function of μPD9328AGK-BE9** (Clock pulse generator for CCD image sensor)

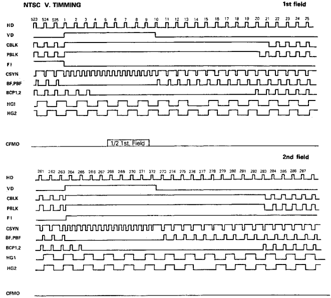
<table>
<tr><th>Pin No.</th><th>Symbol</th><th>I/O</th><th>Pin Name</th><th>Function</th></tr>
<tr><td>1</td><td>GND</td><td>—</td><td>GND</td><td></td></tr>
<tr><td>2</td><td>SHS1</td><td>I</td><td>Shutter Speed Setting 1</td><td rowspan="3">Terminals for setting shutter speed. All of these pins are grounded since shutter speed is set by serial data (SDI) in this camera.
<table>
<tr><th>SHS2</th><th>SHS1</th><th>SHS3 = L</th><th>SHS3 = H</th></tr>
<tr><td>L</td><td>L</td><td>Normal</td><td>1/1000</td></tr>
<tr><td>L</td><td>H</td><td>1/100</td><td>1/2000</td></tr>
<tr><td>H</td><td>L</td><td>1/250</td><td>1/4000</td></tr>
<tr><td>H</td><td>L</td><td>1/500</td><td>1/8000</td></tr>
</table>
Every pin is internally pulled down.</td></tr>
<tr><td>3</td><td>SHS2</td><td>I</td><td>Shutter Speed Setting 2</td></tr>
<tr><td>4</td><td>SHS3</td><td>I</td><td>Shutter Speed Setting 3</td></tr>
<tr><td>5</td><td>TGM1</td><td>I</td><td>Store Mode Setting 1</td><td rowspan="2">Terminals for setting store (readout) mode. These are fixed for field readout in this camera.
<table>
<tr><th>TGM1</th><th>TGM2</th><th>Store mode</th></tr>
<tr><td>L</td><td>L</td><td>Field</td></tr>
<tr><td>L</td><td>H</td><td>Inhibited</td></tr>
<tr><td>H</td><td>L</td><td>Pseudo field (only one line is read a field)</td></tr>
<tr><td>H</td><td>H</td><td>Frame</td></tr>
</table></td></tr>
<tr><td>6</td><td>TGM2</td><td>I</td><td>Store Mode Setting 2</td></tr>
<tr><td>7</td><td>INIT</td><td>I</td><td>Serial Interface Reset</td><td>Terminal to reset the serial interface to the initial state at power on (Reset by low level input). When the serial interface is not used, this level is fixed to low.</td></tr>
<tr><td>8</td><td>SCK</td><td>I</td><td>Serial Clock Input</td><td>Clock input terminal for input of shutter speed setting serial data.</td></tr>
<tr><td>9</td><td>SDT</td><td>I</td><td>Serial Data Input</td><td>Input terminal for shutter speed setting serial data</td></tr>
<tr><td>10</td><td>SRD</td><td>O</td><td>Serial Interface Ready Output</td><td>Output terminal of enable signal of serial data transmission to microprocessor, etc. Serial data transmission is enabled with low level output.</td></tr>
<tr><td>11</td><td>FI</td><td>O</td><td>Field Index</td><td>Output terminal of field discrimination pulse.
Low level output in the 1st field of NTSC or 1st and 3rd fields of PAL. High level output in the 2nd field of NTSC or 2nd and 4th fields of PAL.</td></tr>
<tr><td>12</td><td>VD</td><td>O</td><td>Vertical Drive</td><td>To output pulse at the beginning of every field. This pulse is used as the timing reference in the set.</td></tr>
<tr><td>13</td><td>SIND</td><td>O</td><td>Shutter Index</td><td>N-ch open drain output port to output low level in the normal mode.</td></tr>
<tr><td>14</td><td>TG</td><td>O</td><td>Transfer Gate Pulse</td><td>To output transfer gate drive pulse to read charges of photo cells by the vertical register.</td></tr>
<tr><td>15</td><td>V1</td><td>O</td><td>Vertical Transfer Pulse 1</td><td rowspan="4">To output CCD vertical register drive pulse to the CCD sensor through the inverter driver.</td></tr>
<tr><td>16</td><td>V2</td><td>O</td><td>Vertical Transfer Pulse 2</td></tr>
<tr><td>17</td><td>V3</td><td>O</td><td>Vertical Transfer Pulse 3</td></tr>
<tr><td>18</td><td>V4</td><td>O</td><td>Vertical Transfer Pulse 4</td></tr>
<tr><td>19</td><td>VSUB</td><td>O</td><td>Board Shutter Pulse</td><td>Output terminal of shutter pulse for VOD (Vertical Overflow Drain method) shutter operation of the CCD sensor</td></tr>
<tr><td>20</td><td>GND</td><td>O</td><td>Ground</td><td></td></tr>
<tr><td>21</td><td>VDD</td><td>O</td><td>Power Supply</td><td>+5 V power supply terminal</td></tr>
<tr><td>22</td><td>CS2</td><td>O</td><td>Color Sampling Pulse 2</td><td>To output sampling pulse for color separation sample holding. Color phase can be set by CSP1 (pin 32) and CSP2 (pin 31).
Color phase is different from CS1 at an angle of 180°.</td></tr>
<tr><td>23</td><td>CS1</td><td>O</td><td>Color Sampling Pulse 1</td><td>To output sampling pulse for color separation sample holding. Color phase can be set by CSP1 (pin 33) and CSP2 (pin 32).</td></tr>
<tr><td>24</td><td>TST10</td><td>—</td><td>Test Pin 10</td><td>Test pin pulled down internally. To be fixed at low level in general.</td></tr>
</table>

Pin No.	Symbol	I/O	Pin Name	Function
25	H2L	O	Horizontal Last Gate Transfer Pulse	Output terminal of horizontal drive pulse whose level is high during horizontal blanking period. This output is directly supplied to øH2L terminal of the CCD sensor.
26	H2	O	Horizontal Transfer Pulse 2	Output terminal of horizontal drive pulse whose level is high during horizontal blanking period. This output is directly supplied to øH2 terminal of the CCD sensor.
27	H1	O	Horizontal Transfer Pulse 1	Output terminal of horizontal drive pulse whose level is low during horizontal blanking period. This output is directly supplied to øH1 terminal of the CCD sensor.
28	TST11	—	Test Pin 11	Test pin pulled down internally
29	MCK2	O	Main Clock 2	Output terminal of main clock
30	MCK1	O	Main Clock 1	Output terminal of main clock
31	CSP2	I	Color Sampling Phase Setting 1, 2	For phase setting of main clock outputs of CS1 (pin 23) and CS2 (pin 22). For the phase of each main clock, refer to the timing chart.
32	CSP1	I		CSP2 | CSP1 | CS1, CS2 output signals L | L | Main clock phase 1 L | H | Main clock phase 2 H | L | Main clock phase 3 H | H | Main clock phase 4
33	MCP	I	Main Clock Phase Setting	For phase setting of main clock outputs of MCK1 (pin 29) and MCK2 (pin 30). For the phase of each main clock, refer to the timing chart. MCP | MCK1 output signal | MCK2 output signal L | Main clock phase 1 | Main clock phase 3 H | Main clock phase 2 | Main clock phase 4
34	R0	O	Horizontal Output Reset	Output terminal of CCD sensor output reset pulse. Output reset timing pulse of this terminal is added with DC component and is supplied to øR terminal of the CCD sensor. The polarity is positive.
35	TST7	—	Test Pin 7	Test terminal pulled down internally. Level is generally fixed to low.
36	HBLK	O	Horizontal Transfer Blanking	This output applies blanking to horizontal transfer pulse since CCD horizontal transfer register should be stopped every time it scans a line in the vertical transfer period.
37	PBLK	O	Pre-composite Blanking	To output wider blanking than CBLK (pin 45) for the trailing edge
38	BCP1	O	Optical Black Clamping 1	To output pulse for clamping optical black of every sensor output line. Composite output with low level when effective pixel is absent in the blanking period.
39	BCP2	O	Optical Black Clamping 2	To output pulse for clamping optical black of every sensor output line. Composite output with low level when effective pixel is absent in the blanking period.
40	VDD	—	Power Supply	+5 V power supply terminal
41	GND	—	Ground	Grounding terminal
42	HG2	O	Horizontal Gate 2	Line discrimination signal output for color demodulation. NTSC : To reset every 277 lines CCIR : To reset every 322 lines (Make sure that this is not inversion pulse of HG1.)
43	HG1	O	Horizontal Gate 1	Line discrimination signal output for color demodulation. NTSC : To reset every 14 lines CCIR : To reset every 9 lines
44	CINV	I	Color Separation Carrier Inversion	Input terminal to change over the phase of color separation pulses CS1 (pin 23) and CS2 (pin 22). This terminal is internally pulled up and generally connected with HG1 output (pin 43).

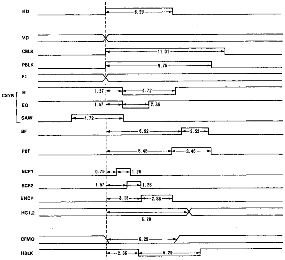
<table>
<tr><th>Pin No.</th><th>Symbol</th><th>I/O</th><th>Pin Name</th><th>Function</th></tr>
<tr><td>45</td><td>CBLK</td><td>O</td><td>Composite Blanking</td><td>To output pulse to be used for video blanking in the encoder.
NTSC : H : 11.01 µs, V : 20 H blanking
CCIR : H : 12.02 µs, V : 25 H blanking</td></tr>
<tr><td>46</td><td>ENCP</td><td>O</td><td>Encoder Clamping</td><td>Pulse output for DC component reproduction in the encoder.
1H period continuous pulse.</td></tr>
<tr><td>47</td><td>HD</td><td>O</td><td>Horizontal Drive Pulse Output</td><td>To output pulse synchronizing with the beginning of every line. To be used as horizontal reference pulse in the set.</td></tr>
<tr><td>48</td><td>CSYN</td><td>O</td><td>Composite Sync. Signal</td><td>Standard composite sync. signal for NTSC and CCIR systems.
NTSC : Conforms to RS-170
PAL : Conforms to CCIR
SECAM : Conforms to CCIR</td></tr>
<tr><td>49</td><td>PBF</td><td>O</td><td>Pre-burst Flag Pulse Output</td><td>NTSC, PAL : To output signal whose timing is faster than BF output (pin 50).
SECAM : To output IDP pulse to insert scan line discrimination signal in the vertical blanking period.</td></tr>
<tr><td>50</td><td>BF</td><td>O</td><td>Burst Flag Pulse Output</td><td>Output pulse to form and insert burst signal in the color encoder.
SECAM : SCBL</td></tr>
<tr><td>51</td><td>LSW</td><td>O</td><td>Line Switch</td><td>Output of line discrimination signal. In the event of internal synchronization, level is low at the 1st line of the 1st field.</td></tr>
<tr><td>52</td><td>LRST</td><td>I</td><td>Line Switch Reset</td><td>External reset signal input to reset LSW output (pin 51) in case of external synchronization. This terminal is internally pulled up.
 Be sure that phase and pulse width are equalized to burst flag.</td></tr>
<tr><td>53</td><td>LCNT</td><td>I</td><td>Line Switch Control</td><td>Timing control signal input for generating line switch signal in external synchronization. This terminal is internally pulled down.</td></tr>
<tr><td>54</td><td>CFMO</td><td>O</td><td>Color Frame Output</td><td>Pulse output at the beginning of every color frame. Period is 4 fields for NTSC or 8 fields for CCIR.</td></tr>
<tr><td>55</td><td>FMP</td><td>O</td><td>Frame Pulse Output</td><td>Output terminal of color frame discrimination signal for try state.</td></tr>
<tr><td>56</td><td>TVM2</td><td>I</td><td></td><td rowspan="2">Terminals for TV mode setting
<table>
<tr><th>TVM1</th><th>TVM2</th><th>TV mode</th></tr>
<tr><td>L</td><td>L</td><td>NTSC</td></tr>
<tr><td>L</td><td>H</td><td>INHIBIT</td></tr>
<tr><td>H</td><td>L</td><td>PAL</td></tr>
<tr><td>H</td><td>H</td><td>SECAM</td></tr>
</table></td></tr>
<tr><td>57</td><td>TVM</td><td>I</td><td></td></tr>
<tr><td>58</td><td>DSM2</td><td>I</td><td>Device Mode 2</td><td rowspan="2">Device selection terminals that are pulled down internally.
<table>
<tr><th colspan="2"></th><th colspan="2">SHMD = L (VOD)</th><th colspan="2">SHMD = H (Drain-out)</th></tr>
<tr><th>SHS2</th><th>SHS1</th><th>SHSP = L</th><th>SHSP = H</th><th>DSM1 = L</th><th>DSM1 = H</th></tr>
<tr><td>L</td><td>L</td><td>Normal</td><td>Normal</td><td>Normal</td><td>Normal</td></tr>
<tr><td>L</td><td>H</td><td>1/100</td><td>1/500</td><td>1/250</td><td>1/500</td></tr>
<tr><td>H</td><td>L</td><td>1/250</td><td>1/2000</td><td>1/500</td><td>1/1000</td></tr>
<tr><td>H</td><td>H</td><td>1/1000</td><td>1/4000</td><td>1/1000</td><td>1/2000</td></tr>
</table>
SHS1 = Pin 2, SHS2 = Pin 3, SHSP = Pin 4, DSM1 = Pin 59, SHMD = Pin 62</td></tr>
<tr><td>59</td><td>DSM1</td><td>I</td><td>Device Mode 1</td></tr>
<tr><td>60</td><td>GND</td><td>—</td><td>Ground</td><td>Ground terminal</td></tr>
<tr><td>61</td><td>VDD</td><td>—</td><td>Power Supply</td><td>+5 V power supply terminal</td></tr>
</table>

Pin No.	Symbol	I/O	Pin Name	Function
62	SHMD	I	Charge Drain Way Selection	Terminal to select charge draining way. This terminal is internallypulled down. For setting, refer to descriptions on pins 58 and 59.
63	SWDR	I	Charge Drain Direction Selection	Internally pulled down terminal to select direction of charge drain. Low : Normal direction High : Reverse direction
64	SSMD	I	Smear Sweep Mode Setting	To determine smear sweep or not. Low level : Inactivated High level : Activated This terminal is internally pulled down.
65	TST2	—	Test Pin 2	Test terminals which are pulled down internally.
66	TST3	—	Test Pin 3	
67	TST12	—	Test Pin 12	
68	TST4	—	Test Pin 4	
69	TST5	—	Test Pin 5	
70	TST6	—	Test Pin 6	
71	TST8	—	Test Pin 8	
72	VRI	I	External V. Sync. Signal Input	Input terminal of vertical sync. signal for external synchronization. To detect fall of signal. Internal pull-up terminal for Schmitt trigger input.
73	RPI	I	External H. Sync Signal Input	Input terminal of horizontal sync. signal for external synchronization. To detect rise of signal. Internal pull-up terminal for Schmitt trigger input.
74	PBTH	I	Synchronizing System Switch	Internal pull-down terminal to switch synchronizing system. Low level : Internal synchronization High level : External synchronization
75	EOO	O	Phase Detector Output	Output terminal of phase comparison between CSYN horizontal sync. signal component and RPI input signal. To detect leading edge of horizontal sync signal.
76	TST1	—	Test Pin 1	Test terminals which are internally pulled down.
77	TST9	—	Test Pin 9	
78	OSCI	I	Oscillation Input	Input terminal for internal oscillation circuit.
79	OSCO	O	Oscillation Output	Output terminal for internal oscillation circuit. Frequency of oscillation output is double of horizontal drive frequency.
80	VDD	—	Power Supply	+5 V power supply terminal

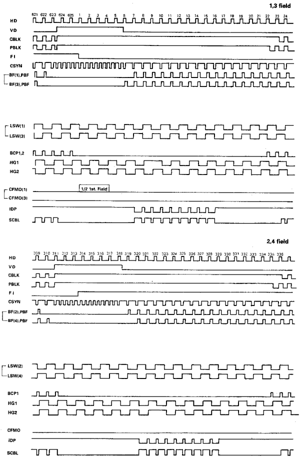
NTSC V. TIMMING


1st field
523 524 525 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
HD
VD
CBLK
PBLK
FI
CSYN
BF,PBF
BCP1,2
HG1
HG2
CFMO
1/2 1st. Field
2nd field
261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287
HD
VD
CBLK
PBLK
FI
CSYN
BF,PBF
BCP1,2
HG1
HG2
CFMO

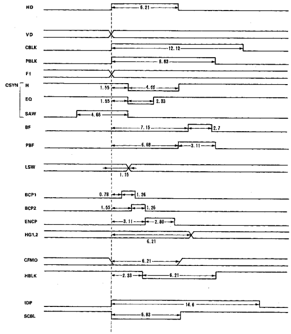
NTSC H. TIMMING

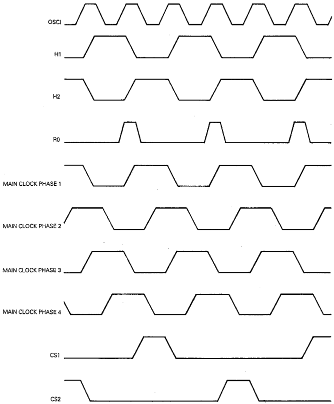

HD
6.29
VD
CBLK
11.01
PBLK
9.75
FI
CSYN
H
1.57
4.72
EQ
1.57
2.36
SAW
4.72
BF
6.92
2.52
PBF
6.45
3.46
BCP1
0.79
1.26
BCP2
1.57
1.26
ENCP
3.15
2.83
HG1,2
6.29
CFMO
6.29
HBLK
2.36
6.29

PAL V. TIMMING


1,3 field
621 622 623 624 625 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
HD
VD
CBLK
PBLK
FI
CSYN
BF(1),PBF
BF(3),PBF
LSW(1)
LSW(3)
BCP1,2
HG1
HG2
CFMO(1)
1/2 1st. Field
CFMO(3)
IDP
SCBL
2,4 field
309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336
HD
VD
CBLK
PBLK
FI
CSYN
BF(2),PBF
BF(4),PBF
LSW(2)
LSW(4)
BCP1
HG1
HG2
CFMO
IDP
SCBL

PAL H. TIMMING


HD
6.21
VD
CBLK
12.12
PBLK
9.63
F1
CSYN
H
1.55
4.66
EQ
1.55
2.33
SAW
4.66
BF
7.15
2.7
PBF
6.68
3.11
LSW
1.15
BCP1
0.78
1.26
BCP2
1.55
1.26
ENCP
3.11
2.80
HG1,2
6.21
CFMO
6.21
HBLK
2.33
6.21
IDP
14.6
SCBL
6.83

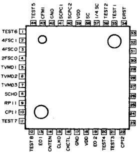

OSCI
H1
H2
R0
MAIN CLOCK PHASE 1
MAIN CLOCK PHASE 2
MAIN CLOCK PHASE 3
MAIN CLOCK PHASE 4
CS1
CS2

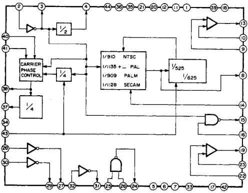
Note: CS1 and CS2 are waveforms as CSP1 = CSP2 = "L".

- **ICs appearing hereinafter are used only for the board assemblies of the E version.**

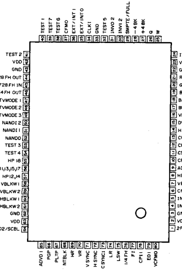
■ JCS0001 [JVC] (SSG)

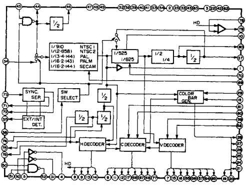
(TOP VIEW)


TEST6 1
4FSC I 2
4FSC O 3
2FSC O 4
TVMD I 5
TVMD2 6
TVMD3 7
SCHD 8
RP I I 9
CPI I 10
TEST 7 11
TEST 8 12
EO I 13
CNTEN 14
CLKO 15
CKCTL 16
GND 17
VDD 18
EO 2 19
TEST4 20
TEST3 21
CPI2 22
RP I2 23
NANDO 24
NANDI1 25
NANDI2 26
INV 30 27
INV 31 28
INV 20 29
INV 21 30
INV I0 31
INV I1 32
NC 33
DRST 34
TEST I 35
TEST2 36
1/4 SC 37
SC 38
VDD 39
SCPC 2 40
SCPC I 41
GND 42
CFMI 43
TEST5 44

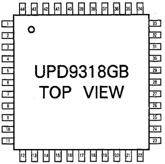

CARRIER PHASE CONTROL
1/2
1/4
1/4
1/910 NTSC
1/1135 + _ PAL
1/909 PALM
1/1128 SECAM
1/525
1/625

■ JCS0002 [JVC] (SSG)

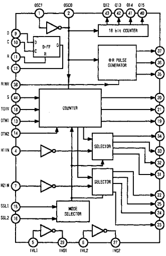

2FH 1
VDD 2
GND 3
INVO 1 4
INVI 1 5
CP 6
VBLK 7
HBLK 8
ADHBL 9
CFM1 10
CSYNC 11
CBLK 12
CHD 13
HD 14
DVD 15
VD 16
BF/IDP 17
BAR OFF/ON 18
B 19
G 20
R 21
GND 22
VDD 23
I 24
W 25
Q 26
+4.8K 27
−4.8K 28
SMPTE/FULL 29
INVI 2 30
INVO 2 31
TEST 5 32
GND 33
CLKI 34
EXT/INTO 35
EXT/INT I 36
CFMO 37
TEST 6 38
TEST 7 39
TEST 1 40
TEST 2 41
VDD 42
GND 43
1728 FH OUT 44
1728 FH IN 45
864 FH OUT 46
TVMODE 1 47
TVMODE 2 48
TVMODE 3 49
NANDI 2 50
NANDI 1 51
NANDO 52
TEST 3 53
TEST 4 54
HP 18 55
HP11,13,15,17 56
HP12,14 57
VBLKW 1 58
VBLKW 2 59
HBLKW 1 60
HBLKW 2 61
GND 62
VDD 63
ADVD2/SCBL 64
ADVD 1 65
PGP 66
PLTP 67
NTBLK 68
HR 69
VR 70
V SYNC 71
H SYNC 72
C SYNC1 73
LR 74
LSW 75
1/4 FH 76
FI 77
CPI I 78
EOI 79
VCFMO 80


1/2
HD
1/910 NTSC 1
1/(2·858) NTSC 2
1/(3·4·144) PAL
1/(6·2·143) PALM
1/(6·2·144) SECAM
1/525
1/625
1/2
1/4
1/2
SYNC. SEP.
SW SELECT
1/2
EXT/INT DET.
1/2
1/2
COLOR BAR GEN.
H DECODER
C DECODER
V DECODER
HD

■ UPD9318G [NEC]
(Clock Pulse Generator for CCD)


UPD9318GB
TOP VIEW
44 43 42 41 40 39 38 37 36 35 34
1 2 3 4 5 6 7 8 9 10 11
33 32 31 30 29 28 27 26 25 24 23
12 13 14 15 16 17 18 19 20 21 22

Pin No.	Symbol	I/O	Description
1	OSC1	O	Main clock output (bufferd)
2	OSCφ	I	main clock input
3	GND	-	GND
4	H1IN	I	Horizontal drive pulse 1
5	IVI1	I	Invertor input 1
6	IVI2	I	Invertor input 2
7	H2IN	I	Horizontal drive pulse 2
8	VDD	-	VDD
9	D	I	Data (D-FF input)
10	C	I	Clock (D-FF input)
11	R	I	Reset (D-FF input)
12	Q	O	D-FF output
13	DIM1	I	φTG pulse width control 1
14	DIM2	I	φTG pulse width control 2
15	SSL1	I	Mode select 1
16	SSL2	I	Mode select 2
17	GND	-	GND
18	TGIV	I	φTG porality select
19	OB	O	Optical black
20	TGA	O	φTG output
21	TGB	O	φTG output
22	2L	O	Pulse output 2L
23	H2C	O	Pulse output 2C
24	H2B	O	Pulse output 2B
25	H2A	O	Pulse output 2A
26	GND	-	GND
27	IVO2	O	Invertor output 2
28	VDD	-	VDD
29	IVO1	O	Invertor output 1
30	GND	-	GND
31	H1C	O	Pulse output 1C
32	H1B	O	Pulse output 1B
33	H2A	O	Pulse output 2A
34	1L	O	Pulse output 1L
35	R3	O	Reset pulse output 3
36	R2	O	Reset pulse output 2
37	R1	O	Reset pulse output 1
38	RINV	I	Reset pulse porality select
39	VDD	-	VDD
40	Q15	O	φM countdown output
41	Q14	O	φM countdown output
42	Q13	O	φM countdown output
43	Q12	O	φM countdown output
44	S	I	Timing pulse input


OSC1
OSC0
Q12 Q13 Q14 Q15
1 2 43 42 41 40
16 bit COUNTER
D 9
C 10
R 11
Q 12
D-FF
D C R Q
ΦR PULSE GENERATOR
37 R1
36 R2
35 R3
RINV 38
S 44
TGIV 18
DTM1 13
DTM2 14
COUNTER
20 TGA
21 TGB
19 OB
34 1L
33 H1A
32 H1B
31 H1C
H1IN 4
SELECTOR
H2IN 7
SELECTOR
22 2L
25 H2A
24 H2B
23 H1C
SSL1 15
SSL2 16
MODE SELECTOR
5 IVL1
29 IVO1
6 IVL2
27 IVO2

SECTION 6
ELECTRICAL PARTS LIST

SAFETY PRECAUTION:

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified parts numbers.
For maximum reliability and performance, all other replacement parts should be identical to those specified.

NOTE:

- Parts not denoted by parts numbers are not supplied by JVC.
- Abbreviations in this list are as follows:

RESISTORS

In the "Description" column:

All resistance values are in ohms (Ω).
K expresses kilo-ohm (1 000 ohms, kΩ).
M expresses mega-ohm (10^6 ohms, MΩ).

In the "Parts Name" column:

COMP. RESISTOR	Composition Resistor
U.F. RESISTOR	Non-inflammable Resistor
O.M.F. RESISTOR	Oxide Metalized Film Resistor
FUSI. RESISTOR	Fusible Resistor
M.P. RESISTOR	Metal Plate Resistor
M.G. RESISTOR	Metal Graze Resistor
M.F. RESISTOR	Metal Film Resistor
W.W. RESISTOR	Wire Wound Resistor

CAPACITORS

In the "Description" column:

All capacitance values are in microfarad (μF) unless otherwise indicated.
P expresses picofarad (10^{-12} farad, pF).

In the "Parts Name" column:

TRIM. CAPACITOR	Trimmer Capacitor
CER. CAPACITOR	Ceramic Capacitor
E. CAPACITOR	Electrolytic Capacitor
TAN. CAPACITOR	Tantalum Capacitor
MPP CAPACITOR	Metalized Polypropylene Capacitor
O.F. CAPACITOR	Oil Film Capacitor
MPF CAPACITOR	Metalized Polyfilm Capacitor
F.M. CAPACITOR	Film Mica Capacitor
P.P. CAPACITOR	Polypropylene Capacitor
P.S. CAPACITOR	Polystyrene Capacitor

Note: In the "Description" column of the parts list, (U) means the parts for the U version while (E) is for the E Version.

Symbol No.	Part No.	Part Name	Description	
IC1	SCV1585-064	I.C.(M)	JVC (U)	← **for U version**
	SCV1585-067	I.C.(M)	JVC (E)	← **for E version**

6.1 N.DR [NTSC] board assembly list 5 1 N
for U version 〈SCK2315-03-N0A〉 5 1 N□□□□□

Symbol No.	Part No.	Part Name	Description	
IC2	UPD9328AGK-BE9	I.C(DIGI-MOS)	NEC	
IC3	UPD16501GS	I.C(DIGI-MOS)	NEC	
IC4	UPD16501GS	I.C(DIGI-MOS)	NEC	
IC5	UPD16501GS	I.C(DIGI-MOS)	NEC	
IC6	MC74HC08AF	I.C.(M)	MOTOROLA	
IC8	TC7S02F	I.C.(M)	TOSHIBA	
IC9	TC4S81F	I.C(DIGI-MOS)	TOSHIBA	
IC10	TC7SU04F	I.C(DIGI-MOS)	TOSHIBA	
IC11	MC74HC14AF	I.C.(M)	MOTOROLA	
IC12	TC7S08F	I.C(DIGI-MOS)	TOSHIBA	
IC13	TC7S32F	I.C.(M)	TOSHIBA	
IC14	RC78L15UA	I.C.(MONO-ANA)	RAYTHEON	
IC15	MC74AC04ML	I.C(DIGI-OTHER)	MOTOROLA	
IC16	MC74AC04ML	I.C(DIGI-OTHER)	MOTOROLA	
IC17	MC74HC74AF	I.C(DIGI-MOS)	MOTOROLA	
IC18	TC40H032F	I.C(DIGI-MOS)	TOSHIBA	
IC19	MC74HC08AF	I.C.(M)	MOTOROLA	
IC20	MC74HC02AF	I.C(DIGI-MOS)	MOTOROLA	
Q2	2SD1820(QR)	TRANSISTOR	MATSUSHITA	
Q3	2SD1820(QR)	TRANSISTOR	MATSUSHITA	
Q4	2SD1820(QR)	TRANSISTOR	MATSUSHITA	
Q5	2SD874(QR)	TRANSISTOR	MATSUSHITA	
Q6	2SD874(QR)	TRANSISTOR	MATSUSHITA	
Q7	2SB766(QR)	TRANSISTOR	MATSUSHITA	
Q9	2SB766(QR)	TRANSISTOR	MATSUSHITA	
Q10	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q11	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q12	2SB1219(QR)	TRANSISTOR	MATSUSHITA	
Q13	2SD1820(QR)	TRANSISTOR	MATSUSHITA	
D1	MA335	SI DIODE	MATSUSHITA	
D2	MA142A	DIODE	MATSUSHITA	
D3	HSM88AS	SI DIODE	HITACHI	
D4	MA142A	DIODE	MATSUSHITA	
D5	MA142A	DIODE	MATSUSHITA	
D6	MA142A	DIODE	MATSUSHITA	
D7	MA142A	DIODE	MATSUSHITA	
D8	MA335	SI DIODE	MATSUSHITA	
D10	MA142A	DIODE	MATSUSHITA	
D16	MA142A	DIODE	MATSUSHITA	
D18	RD16MB1	ZENER DIODE	NEC	
R1	NRSA02J-100	M.G.RESISTOR	10	1/10W
R2	NRSA02J-100	M.G.RESISTOR	10	1/10W
R3	NRSA02J-100	M.G.RESISTOR	10	1/10W
R4	NRSA02J-100	M.G.RESISTOR	10	1/10W
R5	NRSA02J-100	M.G.RESISTOR	10	1/10W
R6	NRSA02J-100	M.G.RESISTOR	10	1/10W
R9	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R10	NRSA02J-220	M.G.RESISTOR	22	1/10W
R11	NRSA02J-220	M.G.RESISTOR	22	1/10W
R12	NRSA02J-220	M.G.RESISTOR	22	1/10W
R13	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R14	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R16	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R17	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R18	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R19	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R20	NRSA02J-561	M.G.RESISTOR	560	1/10W
R21	NRSA02J-331	M.G.RESISTOR	330	1/10W
R22	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R24	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R26	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R27	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R29	NRSA02J-220	M.G.RESISTOR	22	1/10W
R30	NRSA02J-221	M.G.RESISTOR	220	1/10W
R31	NRSA02J-221	M.G.RESISTOR	220	1/10W
R32	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R33	NRSA02J-100	M.G.RESISTOR	10	1/10W
R34	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R35	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R36	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R37	NRSA02J-100	M.G.RESISTOR	10	1/10W
R38	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R39	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R40	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R41	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R42	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R43	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R44	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R45	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R46	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R47	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R48	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R49	NRSA02J-221	M.G.RESISTOR	220	1/10W
R50	NRSA02J-221	M.G.RESISTOR	220	1/10W
R51	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R52	NRSA02J-393	M.G.RESISTOR	39K	1/10W
R53	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R60	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R61	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R62	NRSA02J-101	M.G.RESISTOR	100	1/10W
R63	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R64	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R68	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R69	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R70	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R72	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R73	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R74	NRSA02J-101	M.G.RESISTOR	100	1/10W
R75	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R78	NRSA02J-220	M.G.RESISTOR	22	1/10W
R80	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R81	NRSA02J-101	M.G.RESISTOR	100	1/10W
R85	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R86	NRSA02J-560	M.G.RESISTOR	56	1/10W
R87	NRSA02J-560	M.G.RESISTOR	56	1/10W
R88	NRSA02J-560	M.G.RESISTOR	56	1/10W
R89	NRSA02J-560	M.G.RESISTOR	56	1/10W
R90	NRSA02J-560	M.G.RESISTOR	56	1/10W
R91	NRSA02J-560	M.G.RESISTOR	56	1/10W
R92	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
R93	NRSA02J-330	M.G.RESISTOR	33	1/10W
VR1	NVP1415-203	TRIM.RESISTOR	20K	Eoo

Symbol No.	Part No.	Part Name	Description
VR2	NVP1415-102	V.RESISTOR	1K SHP
VR3	NVP1415-102	V.RESISTOR	1K CP
VR4	NVP1415-102	V.RESISTOR	1K HP
VR5	NVP1415-203	TRIM.RESISTOR	20K B Vsμb
VR6	NVP1415-203	TRIM.RESISTOR	20K G Vsμb
VR7	NVP1415-203	TRIM.RESISTOR	20K R Vsμb
C1	NCB21EK-473	CER.CAPACITOR	0.047 25V
C2	NEA10JM-337	E.CAPACITOR	330 6.3V
C3	NEA10JM-337	E.CAPACITOR	330 6.3V
C4	NCB21EK-473	CER.CAPACITOR	0.047 25V
C5	NCB21EK-473	CER.CAPACITOR	0.047 25V
C7	NCB21EK-473	CER.CAPACITOR	0.047 25V
C8	NCB21EK-473	CER.CAPACITOR	0.047 25V
C9	NCT03CH-101	CER.CAPACITOR	100P 50V
C10	NCB21EK-473	CER.CAPACITOR	0.047 25V
C11	NCB21EK-473	CER.CAPACITOR	0.047 25V
C12	NEF11CM-106	TAN.CAPACITOR	10 16V
C13	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C16	NCT03CH-680	CER.CAPACITOR	68P 50V
C17	NCT03CH-680	CER.CAPACITOR	68P 50V
C18	NCB21EK-473	CER.CAPACITOR	0.047 25V
C19	NEA10JM-107	E.CAPACITOR	100 6.3V
C20	NCB21EK-473	CER.CAPACITOR	0.047 25V
C21	NCB21EK-473	CER.CAPACITOR	0.047 25V
C22	NCB21EK-473	CER.CAPACITOR	0.047 25V
C23	NCB21EK-473	CER.CAPACITOR	0.047 25V
C24	NEA11EM-106	E.CAPACITOR	10 25V
C25	NCB21EK-473	CER.CAPACITOR	0.047 25V
C26	NEA11AM-336	E.CAPACITOR	33 10V
C27	NCB21EK-473	CER.CAPACITOR	0.047 25V
C28	NCB21EK-473	CER.CAPACITOR	0.047 25V
C29	NCT03CH-100	CER.CAPACITOR	10P 50V
C30	NCT03CH-100	CER.CAPACITOR	10P 50V
C31	NCT03CH-270	CER.CAPACITOR	27P 50V
C32	NCT03CH-220	CER.CAPACITOR	22P 50V
C33	NCT03CH-100	CER.CAPACITOR	10P 50V
C34	NCB21EK-473	CER.CAPACITOR	0.047 25V
C35	NCB21EK-473	CER.CAPACITOR	0.047 25V
C36	NEA11EM-106	E.CAPACITOR	10 25V
C37	NCB21EK-473	CER.CAPACITOR	0.047 25V
C38	NCB21EK-473	CER.CAPACITOR	0.047 25V
C39	NCB21EK-473	CER.CAPACITOR	0.047 25V
C40	NCB21EK-473	CER.CAPACITOR	0.047 25V
C41	NCB21EK-473	CER.CAPACITOR	0.047 25V
C42	NCB21EK-473	CER.CAPACITOR	0.047 25V
C43	NEA11EM-106	E.CAPACITOR	10 25V
C44	NEA11CM-226	E.CAPACITOR	22 16V
C45	NEA10JM-107	E.CAPACITOR	100 6.3V
C46	NCB21EK-473	CER.CAPACITOR	0.047 25V
C47	NCB21EK-473	CER.CAPACITOR	0.047 25V
C48	NCT03CH-271	CER.CAPACITOR	270P 50V
C49	NCT03CH-271	CER.CAPACITOR	270P 50V
C50	NCB21EK-473	CER.CAPACITOR	0.047 25V
C51	NEA11EM-106	E.CAPACITOR	10 25V
C52	NEA11EM-106	E.CAPACITOR	10 25V
C53	NCB21EK-473	CER.CAPACITOR	0.047 25V
C54	NEA11AM-336	E.CAPACITOR	33 10V
C55	NEA11EM-226	E.CAPACITOR	22 25V

Symbol No.	Part No.	Part Name	Description
C56	NEA11EM-226	E.CAPACITOR	22 25V
C57	NEA11EM-226	E.CAPACITOR	22 25V
C58	NCB21EK-473	CER.CAPACITOR	0.047 25V
C59	NCB21EK-473	CER.CAPACITOR	0.047 25V
C62	NCB21EK-473	CER.CAPACITOR	0.047 25V
C63	NCB21EK-473	CER.CAPACITOR	0.047 25V
C64	NEA11EM-106	E.CAPACITOR	10 25V
C65	NEA10JM-107	E.CAPACITOR	100 6.3V
C66	NEA10GM-227	E.CAPACITOR	220 4V
C67	NEA11EM-106	E.CAPACITOR	10 25V
C68	NEA11AM-336	E.CAPACITOR	33 10V
C70	NCB21EK-473	CER.CAPACITOR	0.047 25V
C71	NEA11EM-106	E.CAPACITOR	10 25V
C72	NEA11EM-106	E.CAPACITOR	10 25V
C73	NCB21EK-473	CER.CAPACITOR	0.047 25V
C74	NEA11AM-336	E.CAPACITOR	33 10V
C75	NCB21EK-473	CER.CAPACITOR	0.047 25V
C76	NCB21EK-473	CER.CAPACITOR	0.047 25V
C77	NEA10JM-107	E.CAPACITOR	100 6.3V
C78	NCB21EK-473	CER.CAPACITOR	0.047 25V
C79	NEA11AM-336	E.CAPACITOR	33 10V
C80	NCT03CH-100	CER.CAPACITOR	10P 50V
C81	NCT03CH-100	CER.CAPACITOR	10P 50V
C82	NCB21EK-473	CER.CAPACITOR	0.047 25V
C83	NCB21EK-473	CER.CAPACITOR	0.047 25V
C85	NCB21EK-473	CER.CAPACITOR	0.047 25V
C86	NCB21EK-473	CER.CAPACITOR	0.047 25V
C87	NEA11AM-336	E.CAPACITOR	33 10V
C88	NCT03CH-100	CER.CAPACITOR	10P 50V
L1	SSV1330-150	COIL	15μH
L5	SCV1950-1R8	PEAKING COIL	1.8μH
LC1	SCV1804-222	EMI FILTER	
X1	SCV2224-001	CRYSTAL	25.42657 MHz
CN6	SSV1321-014	CONNECTOR	14 PIN
CN7	SSV1321-014	CONNECTOR	14 PIN
CN8	SSV1321-014	CONNECTOR	14 PIN
CN9	SSV1321-020	CONNECTOR	20 PIN
TP1	SCV1880-001	TEST POINT	

6.2 ISB board assembly list 5 2
〈SCK2314-03-00A〉

5 2 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q2	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q3	3SK157	F.E.T.	NEC	
Q4	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q6	3SK157	F.E.T.	NEC	
Q7	2SA1622(M6)	TRANSISTOR	SANYO	
Q8	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
R1	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R2	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R3	NRSA02J-220	M.G.RESISTOR	22	1/10W
R4	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R6	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R7	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R8	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R9	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R10	NRVA02D-2702	M.F.RESISTOR	27K	1/10W
R11	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R12	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R13	NRSA02J-101	M.G.RESISTOR	100	1/10W
R14	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R15	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R16	NRSA02J-221	M.G.RESISTOR	220	1/10W
R17	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R19	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R20	NRSA02J-221	M.G.RESISTOR	220	1/10W
R21	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R22	NRSA02J-100	M.G.RESISTOR	10	1/10W
R23	NRSA02J-100	M.G.RESISTOR	10	1/10W
C1	NCB21HK-103	CER.CAPACITOR	0.010	50V
C2	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C3	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEF11AM-156	TAN.CAPACITOR	15	10V
C10	NCT03CH-101	CER.CAPACITOR	100P	50V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NEF11AM-156	TAN.CAPACITOR	15	10V
C13	NCT03CH-560	CER.CAPACITOR	56P	50V
CN3	SCV1770-003	CONNECTOR	3 PIN	
CN6	SSV1321-014	CONNECTOR	14 PIN	
TP1	SCV1880-001	TEST POINT		

6.3 ISG board assembly list 5 3
〈SCK2314-04-00A〉

5 3 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q2	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q3	3SK157	F.E.T.	NEC	
Q4	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q6	3SK157	F.E.T.	NEC	
Q7	2SA1622(M6)	TRANSISTOR	SANYO	
Q8	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q9	3SK157	F.E.T.	NEC	
Q10	2SA1622(M6)	TRANSISTOR	SANYO	
Q11	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
R1	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R2	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R3	NRSA02J-220	M.G.RESISTOR	22	1/10W
R4	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R6	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R7	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R8	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R9	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R10	NRVA02D-2702	M.F.RESISTOR	27K	1/10W
R11	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R12	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R13	NRSA02J-101	M.G.RESISTOR	100	1/10W
R14	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R15	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R16	NRSA02J-221	M.G.RESISTOR	220	1/10W
R17	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R19	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R20	NRSA02J-221	M.G.RESISTOR	220	1/10W
R21	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R22	NRSA02J-221	M.G.RESISTOR	220	1/10W
R23	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R24	NRSA02J-221	M.G.RESISTOR	220	1/10W
R25	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R26	NRSA02J-100	M.G.RESISTOR	10	1/10W
R27	NRSA02J-100	M.G.RESISTOR	10	1/10W
C1	NCB21HK-103	CER.CAPACITOR	0.010	50V
C2	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C3	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NEF11AM-156	TAN.CAPACITOR	15	10V
C10	NCT03CH-101	CER.CAPACITOR	100P	50V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NEF11AM-156	TAN.CAPACITOR	15	10V
C13	NCT03CH-560	CER.CAPACITOR	56P	50V
C14	NCT03CH-330	CER.CAPACITOR	33P	50V
CN4	SCV1770-003	CONNECTOR	3 PIN	
CN7	SSV1321-014	CONNECTOR	14 PIN	
TP1	SCV1880-001	TEST POINT		

6.4 ISR board assembly list 5 4

⟨SCK2314-05-00A⟩ 5 4 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q2	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q3	3SK157	F.E.T.	NEC
Q4	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	3SK157	F.E.T.	NEC
Q7	2SA1622(M6)	TRANSISTOR	SANYO
Q8	2SC3930(BC)	TRANSISTOR	MATSUSHITA
R1	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R2	NRSA02J-473	M.G.RESISTOR	47K 1/10W
R3	NRSA02J-220	M.G.RESISTOR	22 1/10W
R4	NRVA02D-3301	M.F.RESISTOR	3.3K 1/10W
R6	NRSA02J-474	M.G.RESISTOR	470K 1/10W
R7	NRVA02D-3301	M.F.RESISTOR	3.3K 1/10W
R8	NRVA02D-4701	M.F.RESISTOR	4.7K 1/10W
R9	NRSA02J-222	M.G.RESISTOR	2.2K 1/10W
R10	NRVA02D-2702	M.F.RESISTOR	27K 1/10W
R11	NRSA02J-104	M.G.RESISTOR	100K 1/10W
R12	NRVA02D-4701	M.F.RESISTOR	4.7K 1/10W
R13	NRSA02J-101	M.G.RESISTOR	100 1/10W
R14	NRVA02D-1001	M.F.RESISTOR	1.0K 1/10W
R15	NRVA02D-4701	M.F.RESISTOR	4.7K 1/10W
R16	NRSA02J-221	M.G.RESISTOR	220 1/10W
R17	NRVA02D-1001	M.F.RESISTOR	1.0K 1/10W
R19	NRVA02D-4701	M.F.RESISTOR	4.7K 1/10W
R20	NRSA02J-221	M.G.RESISTOR	220 1/10W
R21	NRVA02D-1501	M.F.RESISTOR	1.5K 1/10W
R22	NRSA02J-100	M.G.RESISTOR	10 1/10W
R23	NRSA02J-100	M.G.RESISTOR	10 1/10W
C1	NCB21HK-103	CER.CAPACITOR	0.010 50V
C2	NEF11EM-475	TAN.CAPACITOR	4.7 25V
C3	NEF11EM-475	TAN.CAPACITOR	4.7 25V
C4	NCB21EK-473	CER.CAPACITOR	0.047 25V
C5	NCB21EK-473	CER.CAPACITOR	0.047 25V
C7	NEF11VM-105	TAN.CAPACITOR	1.0 35V
C8	NCB21EK-473	CER.CAPACITOR	0.047 25V
C9	NEF11AM-156	TAN.CAPACITOR	15 10V
C10	NCT03CH-101	CER.CAPACITOR	100P 50V
C11	NCB21EK-473	CER.CAPACITOR	0.047 25V
C12	NEF11AM-156	TAN.CAPACITOR	15 10V
C13	NCT03CH-560	CER.CAPACITOR	56P 50V
CN5	SCV1770-003	CONNECTOR	3 PIN
CN8	SSV1321-014	CONNECTOR	14 PIN
TP1	SCV1880-001	TEST POINT	

6.5 PA board assembly list 5 5

⟨SCK2315-02-00A⟩ 5 5 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	NJM062M	I.C.(M)	JRC
IC2	NJM062M	I.C.(M)	JRC
IC3	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC4	NJM062M	I.C.(M)	JRC
IC5	NJM4560MD	I.C.(M)	JRC
IC6	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC7	TC4S69F	I.C.(M)	TOSHIBA
IC101	NJM1496M	I.C.(M)	JRC
IC201	NJM1496M	I.C.(M)	JRC
IC301	NJM1496M	I.C.(M)	JRC
Q101	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q102	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q103	2SK374(Q.R)	FET	MATSUSHITA
Q104	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q105	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q106	2SK374(Q.R)	FET	MATSUSHITA
Q107	2SK374(Q.R)	FET	MATSUSHITA
Q108	2SK374(Q.R)	FET	MATSUSHITA
Q109	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q110	2SK374(Q.R)	FET	MATSUSHITA
Q111	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q112	2SK374(Q.R)	FET	MATSUSHITA
Q113	2SA1622(M6)	TRANSISTOR	SANYO
Q114	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q115	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q116	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q117	2SK374(Q.R)	FET	MATSUSHITA
Q118	2SK374(Q.R)	FET	MATSUSHITA
Q201	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q202	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q203	2SK374(Q.R)	FET	MATSUSHITA
Q204	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q205	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q206	2SK374(Q.R)	FET	MATSUSHITA
Q207	2SK374(Q.R)	FET	MATSUSHITA
Q208	2SK374(Q.R)	FET	MATSUSHITA
Q209	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q210	2SK374(Q.R)	FET	MATSUSHITA
Q211	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q212	2SK374(Q.R)	FET	MATSUSHITA
Q213	2SA1622(M6)	TRANSISTOR	SANYO
Q214	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q215	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q216	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q217	2SK374(Q.R)	FET	MATSUSHITA
Q218	2SK374(Q.R)	FET	MATSUSHITA
Q301	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q302	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q303	2SK374(Q.R)	FET	MATSUSHITA
Q304	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q305	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q306	2SK374(Q.R)	FET	MATSUSHITA
Q307	2SK374(Q.R)	FET	MATSUSHITA
Q308	2SK374(Q.R)	FET	MATSUSHITA
Q309	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q310	2SK374(Q.R)	FET	MATSUSHITA
Q311	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q312	2SK374(Q.R)	FET	MATSUSHITA
Q313	2SA1622(M6)	TRANSISTOR	SANYO

Symbol No.	Part No.	Part Name	Description	
Q314	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q315	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q316	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q317	2SK374(Q.R)	FET	MATSUSHITA	
Q318	2SK374(Q.R)	FET	MATSUSHITA	
D1	MA142A	DIODE	MATSUSHITA	
R1	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R2	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R3	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R4	NRVA02D-1202	M.F.RESISTOR	12K	1/10W
R5	NRVA02D-1502	M.F.RESISTOR	15K	1/10W
R6	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R7	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R11	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R12	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R13	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R101	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R102	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R103	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R104	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R105	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R106	NRSA02J-681	M.G.RESISTOR	680	1/10W
R107	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R108	NRVA02D-2701	M.F.RESISTOR	2.7K	1/10W
R109	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R110	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R111	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R112	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R114	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R115	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R116	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R117	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R118	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R119	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R120	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R121	NRSA02J-221	M.G.RESISTOR	220	1/10W
R122	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R124	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R125	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R126	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R127	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R128	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R129	NRVA02D-2703	M.F.RESISTOR	270K	1/10W
R130	NRVA02D-2703	M.F.RESISTOR	270K	1/10W
R131	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R132	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R133	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R134	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R135	NRVA02D-1502	M.F.RESISTOR	15K	1/10W
R136	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R137	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R138	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R139	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R140	NRVA02D-1201	M.F.RESISTOR	1.2K	1/10W
R141	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R142	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R143	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R144	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R145	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R146	NRSA02J-221	M.G.RESISTOR	220	1/10W
R147	NRSA02J-221	M.G.RESISTOR	220	1/10W
R148	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R149	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R150	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R151	NRVA02D-8202	M.F.RESISTOR	82.0K	1/10W
R152	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R153	NRVA02D-3902	M.F.RESISTOR	39K	1/10W
R154	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R159	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R160	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R161	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R162	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R201	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R202	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R203	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R204	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R205	NRVA02D-1502	M.F.RESISTOR	15K	1/10W
R206	NRSA02J-681	M.G.RESISTOR	680	1/10W
R207	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R208	NRVA02D-2701	M.F.RESISTOR	2.7K	1/10W
R209	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R210	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R211	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R212	NRSA02J-151	M.G.RESISTOR	150	1/10W
R214	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R215	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R216	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R217	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R218	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R219	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R220	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R221	NRSA02J-221	M.G.RESISTOR	220	1/10W
R222	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R224	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R225	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R226	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R227	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R228	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R229	NRVA02D-2703	M.F.RESISTOR	270K	1/10W
R230	NRVA02D-2703	M.F.RESISTOR	270K	1/10W
R231	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R232	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R233	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R234	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R235	NRVA02D-1502	M.F.RESISTOR	15K	1/10W
R236	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R237	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R238	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R239	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R240	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R241	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R242	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R243	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R244	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R245	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R246	NRSA02J-221	M.G.RESISTOR	220	1/10W

Symbol No.	Part No.	Part Name	Description	
R247	NRSA02J-221	M.G.RESISTOR	220	1/10W
R248	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R249	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R250	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R257	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R258	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R259	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R260	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R261	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R262	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R301	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R302	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R303	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R304	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R305	NRVA02D-1502	M.F.RESISTOR	15K	1/10W
R306	NRSA02J-681	M.G.RESISTOR	680	1/10W
R307	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R308	NRVA02D-2701	M.F.RESISTOR	2.7K	1/10W
R309	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R310	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R311	NRSA02J-271	M.G.RESISTOR	270	1/10W
R312	NRSA02J-561	M.G.RESISTOR	560	1/10W
R314	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R315	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R316	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R317	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R318	NRVA02D-4700	M.F.RESISTOR	470	1/10W
R319	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R320	NRVA02D-39R0	M.F.RESISTOR	39.0	1/10W
R321	NRSA02J-221	M.G.RESISTOR	220	1/10W
R322	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R324	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R325	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R326	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R327	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R328	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R329	NRVA02D-2703	M.F.RESISTOR	270K	1/10W
R330	NRVA02D-2703	M.F.RESISTOR	270K	1/10W
R331	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R332	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R333	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R334	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R335	NRVA02D-1502	M.F.RESISTOR	15K	1/10W
R336	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R337	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R338	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R339	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R340	NRVA02D-2701	M.F.RESISTOR	2.7K	1/10W
R341	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R342	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R343	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R344	NRVA02D-1000	M.F.RESISTOR	100	1/10W
R345	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R346	NRSA02J-221	M.G.RESISTOR	220	1/10W
R347	NRSA02J-221	M.G.RESISTOR	220	1/10W
R348	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R349	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R350	NRVA02D-47R0	M.F.RESISTOR	47.0	1/10W
R351	NRVA02D-8202	M.F.RESISTOR	82.0K	1/10W
R352	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R353	NRVA02D-3902	M.F.RESISTOR	39K	1/10W
R354	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R359	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R360	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R361	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R362	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
VR1	NVP1415-202	TRIM.RESISTOR	2K	KNEE
VR2	NVP1415-103	TRIM.RESISTOR	10K	MASTER BLK
VR101	NVP1415-503	TRIM.RESISTOR	50K	B BLK BAL
VR102	NVP1415-202	TRIM.RESISTOR	2K	B IN GAIN
VR201	NVP1415-503	TRIM.RESISTOR	50K	G BLK BAL
VR202	NVP1415-102	V.RESISTOR	2K	G IN GAIN
VR301	NVP1415-503	TRIM.RESISTOR	50K	R BLK BAL
VR302	NVP1415-202	TRIM.RESISTOR	2K	R IN GAIN
C1	NEA10JM-337	E.CAPACITOR	330	6.3V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCB21EK-473	CER.CAPACITOR	0.047	25V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NCB21EK-473	CER.CAPACITOR	0.047	25V
C13	NCB21EK-473	CER.CAPACITOR	0.047	25V
C14	NCT03CH-101	CER.CAPACITOR	100P	50V
C15	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C16	QEX41AM-336	E.CAPACITOR	33	10V
C102	NEA11AM-336	E.CAPACITOR	33	10V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C104	NEA11AM-336	E.CAPACITOR	33	10V
C105	NCB21EK-473	CER.CAPACITOR	0.047	25V
C106	NEN11HM-105	E.CAPACITOR	1.0	50V
C107	NEN11HM-105	E.CAPACITOR	1.0	50V
C108	NCT03CH-2R0	CER.CAPACITOR	2.0P	50V
C109	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	NEA11AM-336	E.CAPACITOR	33	10V
C111	NEA11AM-336	E.CAPACITOR	33	10V
C112	NCB21EK-473	CER.CAPACITOR	0.047	25V
C113	NEA11AM-336	E.CAPACITOR	33	10V
C114	NCB21EK-473	CER.CAPACITOR	0.047	25V
C115	NCB21EK-473	CER.CAPACITOR	0.047	25V
C116	NCB21EK-473	CER.CAPACITOR	0.047	25V
C117	NEA10GM-476	E.CAPACITOR	47	4V
C118	NCB21EK-473	CER.CAPACITOR	0.047	25V
C119	NEA11AM-227	E.CAPACITOR	220	10V
C120	NCT03CH-220	CER.CAPACITOR	22P	50V
C122	NCB21EK-473	CER.CAPACITOR	0.047	25V
C123	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C125	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C126	NCT03CH-101	CER.CAPACITOR	100P	50V
C127	NCT03CH-100	CER.CAPACITOR	10P	50V
C128	NCB21EK-473	CER.CAPACITOR	0.047	25V
C129	NCB21EK-473	CER.CAPACITOR	0.047	25V
C202	NEA11AM-336	E.CAPACITOR	33	10V
C203	NCB21EK-473	CER.CAPACITOR	0.047	25V
C204	NEA11AM-336	E.CAPACITOR	33	10V

Symbol No.	Part No.	Part Name	Description
C205	NCB21EK-473	CER.CAPACITOR	0.047 25V
C206	NEN11HM-105	E.CAPACITOR	1.0 50V
C207	NEN11HM-105	E.CAPACITOR	1.0 50V
C208	NCT03CH-2R0	CER.CAPACITOR	2.0P 50V
C209	NCB21EK-473	CER.CAPACITOR	0.047 25V
C210	NEA11AM-336	E.CAPACITOR	33 10V
C211	NEA11AM-336	E.CAPACITOR	33 10V
C212	NCB21EK-473	CER.CAPACITOR	0.047 25V
C213	NEA11AM-336	E.CAPACITOR	33 10V
C214	NCB21EK-473	CER.CAPACITOR	0.047 25V
C215	NCB21EK-473	CER.CAPACITOR	0.047 25V
C216	NCB21EK-473	CER.CAPACITOR	0.047 25V
C217	NEA10GM-476	E.CAPACITOR	47 4V
C218	NCB21EK-473	CER.CAPACITOR	0.047 25V
C219	NEA11AM-227	E.CAPACITOR	220 10V
C220	NCT03CH-7R0	CER.CAPACITOR	7.0P 50V
C221	NEA11AM-336	E.CAPACITOR	33 10V
C222	NCB21EK-473	CER.CAPACITOR	0.047 25V
C225	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C226	NCT03CH-101	CER.CAPACITOR	100P 50V
C227	NCT03CH-100	CER.CAPACITOR	10P 50V
C228	NCB21EK-473	CER.CAPACITOR	0.047 25V
C229	NCB21EK-473	CER.CAPACITOR	0.047 25V
C302	NEA11AM-336	E.CAPACITOR	33 10V
C303	NCB21EK-473	CER.CAPACITOR	0.047 25V
C304	NEA11AM-336	E.CAPACITOR	33 10V
C305	NCB21EK-473	CER.CAPACITOR	0.047 25V
C306	NEN11HM-105	E.CAPACITOR	1.0 50V
C307	NEN11HM-105	E.CAPACITOR	1.0 50V
C308	NCT03CH-2R0	CER.CAPACITOR	2.0P 50V
C309	NCB21EK-473	CER.CAPACITOR	0.047 25V
C310	NEA11AM-336	E.CAPACITOR	33 10V
C311	NEA11AM-336	E.CAPACITOR	33 10V
C312	NCB21EK-473	CER.CAPACITOR	0.047 25V
C313	NEA11AM-336	E.CAPACITOR	33 10V
C314	NCB21EK-473	CER.CAPACITOR	0.047 25V
C315	NCB21EK-473	CER.CAPACITOR	0.047 25V
C316	NCB21EK-473	CER.CAPACITOR	0.047 25V
C317	NEA10GM-476	E.CAPACITOR	47 4V
C318	NCB21EK-473	CER.CAPACITOR	0.047 25V
C319	NEA11AM-227	E.CAPACITOR	220 10V
C320	NCT03CH-100	CER.CAPACITOR	10P 50V
C322	NCB21EK-473	CER.CAPACITOR	0.047 25V
C323	NEF11AM-225	TAN.CAPACITOR	2.2 10V
C325	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C326	NCT03CH-101	CER.CAPACITOR	100P 50V
C327	NCT03CH-100	CER.CAPACITOR	10P 50V
C328	NCB21EK-473	CER.CAPACITOR	0.047 25V
C329	NCB21EK-473	CER.CAPACITOR	0.047 25V
LC101	SCV1859-001	LOWPASS FILTER	14.3 MHz TRAP
LC102	SCV2161-001	L.P.F(6.4MTRAP)	6.4MHz TRAP
LC201	SCV1859-001	LOWPASS FILTER	14.3 MHz TRAP
LC202	SCV2161-001	L.P.F(6.4MTRAP)	6.4MHz TRAP
LC301	SCV1859-001	LOWPASS FILTER	14.3 MHz TRAP
LC302	SCV2161-001	L.P.F(6.4MTRAP)	6.4MHz TRAP
CN3	SCV1770-003	CONNECTOR	3 PIN
CN4	SCV1770-003	CONNECTOR	3 PIN
CN5	SCV1770-003	CONNECTOR	3 PIN
CN10	SSV1321-020	CONNECTOR	20 PIN
CN11	SSV1321-014	CONNECTOR	14 PIN
TP101	SCV1880-001	TEST POINT	
TP201	SCV1880-001	TEST POINT	
TP301	SCV1880-001	TEST POINT	

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〈SCK2316-03-00A〉

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Symbol No.	Part No.	Part Name	Description
IC1	NJM2068MD	I.C(MONO-ANA)	JRC
IC2	NJM2068MD	I.C(MONO-ANA)	JRC
IC3	NJM2068MD	I.C(MONO-ANA)	JRC
IC4	NJM4560MD	I.C.(M)	JRC
IC5	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC6	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC7	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC8	S-8054HNCB	I.C.(M)	SEIKO
Q2	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q101	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q102	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q103	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q104	2SK374(Q.R)	FET	MATSUSHITA
Q105	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q106	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q107	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q108	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q109	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q110	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q111	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q113	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q114	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q115	2SK374(Q.R)	FET	MATSUSHITA
Q201	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q202	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q203	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q204	2SK374(Q.R)	FET	MATSUSHITA
Q205	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q206	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q207	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q208	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q209	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q210	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q211	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q213	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q214	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q215	2SK374(Q.R)	FET	MATSUSHITA
Q301	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q302	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q303	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q304	2SK374(Q.R)	FET	MATSUSHITA
Q305	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q306	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q307	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q308	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q309	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q310	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q311	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q313	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q314	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q315	2SK374(Q.R)	FET	MATSUSHITA
D1	MA142A	DIODE	MATSUSHITA
D2	MA142WK	DIODE	MATSUSHITA
D3	MA142WK	DIODE	MATSUSHITA
D101	1S2076A	SI.DIODE	HITACHI
D102	1S2076A	SI.DIODE	HITACHI
D103	1S2076A	SI.DIODE	HITACHI

Symbol No.	Part No.	Part Name	Description	
D104	1S2076A	SI.DIODE	HITACHI	
D201	1S2076A	SI.DIODE	HITACHI	
D202	1S2076A	SI.DIODE	HITACHI	
D203	1S2076A	SI.DIODE	HITACHI	
D204	1S2076A	SI.DIODE	HITACHI	
D301	1S2076A	SI.DIODE	HITACHI	
D302	1S2076A	SI.DIODE	HITACHI	
D303	1S2076A	SI.DIODE	HITACHI	
D304	1S2076A	SI.DIODE	HITACHI	
R1	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R2	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R3	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R4	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R5	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R6	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R7	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R10	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R11	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R12	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R101	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R102	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R103	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R104	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R105	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R106	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R107	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R108	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R109	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R110	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R111	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R113	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R115	NRSA02J-683	M.G.RESISTOR	68K	1/10W
R117	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R118	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R119	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R120	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R121	NRVA02D-1500	M.F.RESISTOR	150	1/10W
R122	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R124	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R125	NRSA02J-101	M.G.RESISTOR	100	1/10W
R127	NRSA02J-391	M.G.RESISTOR	390	1/10W
R128	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R129	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R130	NRSA02J-221	M.G.RESISTOR	220	1/10W
R131	NRSA02J-221	M.G.RESISTOR	220	1/10W
R132	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R133	NRSA02J-101	M.G.RESISTOR	100	1/10W
R134	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R135	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R137	NRSA02J-821	M.G.RESISTOR	820	1/10W
R138	NRSA02J-182	M.G.RESISTOR	1.8K	1/10W
R139	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R140	NRSA02J-100	M.G.RESISTOR	10	1/10W
R141	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R142	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R143	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R201	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R202	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W

Symbol No.	Part No.	Part Name	Description	
R203	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R204	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R205	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R206	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R207	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R208	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R209	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R210	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R211	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R213	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R215	NRSA02J-683	M.G.RESISTOR	68K	1/10W
R217	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R218	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R219	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R220	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R221	NRVA02D-1500	M.F.RESISTOR	150	1/10W
R222	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R224	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R225	NRSA02J-101	M.G.RESISTOR	100	1/10W
R227	NRSA02J-391	M.G.RESISTOR	390	1/10W
R228	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R229	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R230	NRSA02J-221	M.G.RESISTOR	220	1/10W
R231	NRSA02J-221	M.G.RESISTOR	220	1/10W
R232	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R233	NRSA02J-101	M.G.RESISTOR	100	1/10W
R234	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R235	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R237	NRSA02J-821	M.G.RESISTOR	820	1/10W
R238	NRSA02J-182	M.G.RESISTOR	1.8K	1/10W
R239	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R240	NRSA02J-100	M.G.RESISTOR	10	1/10W
R241	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R242	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R243	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R301	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R302	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R303	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R304	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R305	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R306	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R307	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R308	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R309	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R310	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R311	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R313	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R315	NRSA02J-683	M.G.RESISTOR	68K	1/10W
R317	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R318	NRSA02J-563	M.G.RESISTOR	56K	1/10W
R319	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R320	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R321	NRVA02D-1500	M.F.RESISTOR	150	1/10W
R322	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R324	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R325	NRSA02J-101	M.G.RESISTOR	100	1/10W
R327	NRSA02J-391	M.G.RESISTOR	390	1/10W
R328	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R329	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W

Symbol No.	Part No.	Part Name	Description	
R330	NRSA02J-221	M.G.RESISTOR	220	1/10W
R331	NRSA02J-221	M.G.RESISTOR	220	1/10W
R332	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R333	NRSA02J-101	M.G.RESISTOR	100	1/10W
R334	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R335	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R337	NRSA02J-821	M.G.RESISTOR	820	1/10W
R338	NRSA02J-182	M.G.RESISTOR	1.8K	1/10W
R339	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R340	NRSA02J-100	M.G.RESISTOR	10	1/10W
R341	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R342	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R343	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
VR101	QVPB612-103	TRIM. RESISTOR	10K	B FLARE
VR102	QVPB612-102	TRIM.RESISTOR	1.0K	B GAMMA
VR104	QVPB612-102	TRIM.RESISTOR	1.0K	B OUT GAIN
VR201	QVPB612-103	TRIM. RESISTOR	10K	G FLARE
VR202	QVPB612-102	TRIM.RESISTOR	1.0K	G GAMMA
VR204	QVPB612-102	TRIM.RESISTOR	1.0K	G OUT GAIN
VR301	QVPB612-103	TRIM. RESISTOR	10K	R FLARE
VR302	QVPB612-102	TRIM.RESISTOR	1.0K	R GAMMA
VR304	QVPB612-102	TRIM.RESISTOR	1.0K	R OUT GAIN
C1	QETA1EM-108	E.CAPACITOR	1000	25V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCB21EK-473	CER.CAPACITOR	0.047	25V
C10	QER40JM-107	E.CAPACITOR	100	6.3V
C13	QER41HM-105	E.CAPACITOR	1.0	50V
C14	NCT03CH-101	CER.CAPACITOR	100P	50V
C15	NCB21EK-473	CER.CAPACITOR	0.047	25V
C101	QER41AM-336	E.CAPACITOR	33	10V
C103	NCT03CH-3R0	CER.CAPACITOR	3.0P	50V
C104	QEPA1CM-106	E.CAPACITOR	10	16V
C105	QER41AM-476	E.CAPACITOR	47	10V
C106	QEJ41VM-105	TAN.CAPACITOR	1.0	35V
C107	QER40JM-107	E.CAPACITOR	100	6.3V
C108	NCB21EK-473	CER.CAPACITOR	0.047	25V
C110	QER41AM-336	E.CAPACITOR	33	10V
C111	NCB21EK-473	CER.CAPACITOR	0.047	25V
C112	NCT03CH-180	CER.CAPACITOR	18P	50V
C113	NCT03CH-470	CER.CAPACITOR	47P	50V
C114	NCT03CH-560	CER.CAPACITOR	56P	50V
C201	QER41AM-336	E.CAPACITOR	33	10V
C203	NCT03CH-3R0	CER.CAPACITOR	3.0P	50V
C204	QEPA1CM-106	E.CAPACITOR	10	16V
C205	QER41AM-476	E.CAPACITOR	47	10V
C206	QEJ41VM-105	TAN.CAPACITOR	1.0	35V
C208	NCB21EK-473	CER.CAPACITOR	0.047	25V
C210	QER41AM-336	E.CAPACITOR	33	10V
C211	NCB21EK-473	CER.CAPACITOR	0.047	25V
C212	NCT03CH-180	CER.CAPACITOR	18P	50V
C213	NCT03CH-470	CER.CAPACITOR	47P	50V

Symbol No.	Part No.	Part Name	Description	
C214	NCT03CH-560	CER.CAPACITOR	56P	50V
C301	QER41AM-336	E.CAPACITOR	33	10V
C303	NCT03CH-3R0	CER.CAPACITOR	3.0P	50V
C304	QEPA1CM-106	E.CAPACITOR	10	16V
C305	QER41AM-476	E.CAPACITOR	47	10V
C306	QEJ41VM-105	TAN.CAPACITOR	1.0	35V
C307	QER40JM-107	E.CAPACITOR	100	6.3V
C308	NCB21EK-473	CER.CAPACITOR	0.047	25V
C310	QER41AM-336	E.CAPACITOR	33	10V
C311	NCB21EK-473	CER.CAPACITOR	0.047	25V
C312	NCT03CH-180	CER.CAPACITOR	18P	50V
C313	NCT03CH-470	CER.CAPACITOR	47P	50V
C314	NCT03CH-560	CER.CAPACITOR	56P	50V
L101	SCV1950-220	PEAKING COIL	22μH	
L201	SCV1950-220	PEAKING COIL	22μH	
L301	SCV1950-220	PEAKING COIL	22μH	
CN9	SCV1766-020	CONNECTOR	20 PIN	
CN10	SSV1320-020	CONNECTOR	20 PIN	
CN11	SSV1320-014	CONNECTOR	14 PIN	
CN12	SSV1591-S06	CONNECTOR	6 PIN	
CN13	SSV1320-006	CONNECTOR	6 PIN	
CN14	SSV1320-010	CONNECTOR	10 PIN	
CN15	SSV1320-008	CONNECTOR	8 PIN	
CN20	SCV2097-060	CONNECTOP	60 PIMN	
TP1	SCV1201-001	TEST POINT	JVC	
TP101	SCV1201-001	TEST POINT	JVC	
TP102	SCV1201-001	TEST POINT	JVC	
TP201	SCV1201-001	TEST POINT	JVC	
TP202	SCV1201-001	TEST POINT	JVC	
TP301	SCV1201-001	TEST POINT	JVC	
TP302	SCV1201-001	TEST POINT	JVC	

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Symbol No.	Part No.	Part Name	Description	
IC1	CXL1009P	I.C(MONO-ANA)	SONY	
IC2	CXL1009P	I.C(MONO-ANA)	SONY	
IC3	NJM4560MD	I.C.(M)	JRC	
IC4	TC7SU04F	I.C(DIGI-MOS)	TOSHIBA	
IC5	TC7SU04F	I.C(DIGI-MOS)	TOSHIBA	
IC6	TC74HC40103AF	I.C.(M)	TOSHIBA	
IC7	TC74HC40103AF	I.C.(M)	TOSHIBA	
IC8	MC14046BF	I.C(DIGI-MOS)	MOTOROLA	
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q2	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q6	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q7	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q8	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q9	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q10	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q11	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q13	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q14	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q15	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q16	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q17	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q18	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q19	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q20	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q21	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q22	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q23	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q24	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q25	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q26	2SJ163(Q.R)	F.E.T.	MATSUSHITA	
Q27	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q28	2SK374(Q.R)	FET	MATSUSHITA	
Q29	DTC124EU	TRANSISTOR	ROHM	
Q30	DTC124EU	TRANSISTOR	ROHM	
Q31	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
D1	MA142A	DIODE	MATSUSHITA	
D2	HSM88AS	SI DIODE	HITACHI	
D3	HSM88AS	SI DIODE	HITACHI	
D4	FC-53M	VARI-CAPA.DIODE	FUJITSU	
R1	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R2	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R3	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R4	NRSA02J-471	M.G.RESISTOR	470	1/10W
R6	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R16	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R18	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R19	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R20	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R21	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R22	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R23	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R24	NRSA02J-101	M.G.RESISTOR	100	1/10W
R25	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R26	NRSA02J-151	M.G.RESISTOR	150	1/10W
R27	NRVA02D-1002	M.F.RESISTOR	10K	1/10W

Symbol No.	Part No.	Part Name	Description	
R28	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R29	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R30	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R31	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R32	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R34	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R35	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R36	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R37	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R38	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R39	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R40	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R41	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R42	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R43	NRSA02J-101	M.G.RESISTOR	100	1/10W
R44	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R45	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R46	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R47	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R51	NRSA02J-151	M.G.RESISTOR	150	1/10W
R52	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R53	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R54	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R55	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R56	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R57	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R58	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R59	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R60	NRVA02D-5602	M.F.RESISTOR	56K	1/10W
R61	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R62	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R63	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R64	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R65	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R66	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R67	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R68	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R69	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R70	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R71	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R72	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R74	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R81	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R82	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R83	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R84	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R85	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R86	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R87	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R88	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R89	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R90	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R91	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R92	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R93	NRSA02J-101	M.G.RESISTOR	100	1/10W
R94	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R95	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R96	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R97	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W

Symbol No.	Part No.	Part Name	Description	
R98	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R99	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R100	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R101	NRSA02J-821	M.G.RESISTOR	820	1/10W
R102	NRSA02J-821	M.G.RESISTOR	820	1/10W
R103	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R104	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R105	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R106	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R107	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R108	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R109	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R110	NRVA02D-3902	M.F.RESISTOR	39K	1/10W
R111	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R112	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R113	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R114	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R115	NRSA02J-100	M.G.RESISTOR	10	1/10W
R116	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R117	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R118	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R119	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R120	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R121	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R122	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R123	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R124	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R125	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R126	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R127	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R128	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
VR1	NVP1415-103	TRIM.RESISTOR	10K	1H Y LEVEL
VR4	NVP1415-502	TRIM.RESISTOR	5K	V BALANCE
VR5	NVP1415-202	TRIM.RESISTOR	2K	V LEVEL
VR6	NVP1415-202	TRIM.RESISTOR	2K	H LEVEL
VR7	NVP1415-202	TRIM.RESISTOR	2K	NOISE SLICE
C1	NEA11AM-336	E.CAPACITOR	33	10V
C3	NEA11AM-336	E:CAPACITOR	33	10V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NEN10JM-476	E.CAPACITOR	47	6.3V
C8	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C9	NEF11EM-474	TAN.CAPACITOR	0.47	25V
C10	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C13	NCB21EK-473	CER.CAPACITOR	0.047	25V
C14	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C15	NCB21EK-473	CER.CAPACITOR	0.047	25V
C16	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C17	NEF11EM-474	TAN.CAPACITOR	0.47	25V
C18	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C19	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C20	NCB21HK-103	CER.CAPACITOR	0.010	50V
C21	NCB21EK-473	CER.CAPACITOR	0.047	25V
C22	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C23	NCT03CH-330	CER.CAPACITOR	33P	50V

Symbol No.	Part No.	Part Name	Description	
C24	NEA11AM-336	E.CAPACITOR	33	10V
C25	NCB21EK-473	CER.CAPACITOR	0.047	25V
C27	NEA10GM-476	E.CAPACITOR	47	4V
C29	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C30	NEF11EM-474	TAN.CAPACITOR	0.47	25V
C31	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C32	NCB21EK-473	CER.CAPACITOR	0.047	25V
C33	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C34	NCB21EK-473	CER.CAPACITOR	0.047	25V
C35	NEA11AM-336	E.CAPACITOR	33	10V
C36	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C37	NCB21EK-473	CER.CAPACITOR	0.047	25V
C38	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C39	NEF11EM-474	TAN.CAPACITOR	0.47	25V
C40	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C41	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C42	NCB21HK-103	CER.CAPACITOR	0.010	50V
C43	NCB21EK-473	CER.CAPACITOR	0.047	25V
C44	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C45	NEA11AM-336	E.CAPACITOR	33	10V
C47	NCT03CH-330	CER.CAPACITOR	33P	50V
C48	NEA11AM-336	E.CAPACITOR	33	10V
C49	NCB21EK-473	CER.CAPACITOR	0.047	25V
C51	NEA10GM-476	E.CAPACITOR	47	4V
C53	NCB21EK-473	CER.CAPACITOR	0.047	25V
C54	NCB21HK-332	CER.CAPACITOR	3300P	50V
C55	NEF11AM-106	TAN.CAPACITOR	10	10V
C56	NEA11HM-105	E.CAPACITOR	1.0	50V
C57	NCB21EK-473	CER.CAPACITOR	0.047	25V
C58	NCT03CH-221	CER.CAPACITOR	220P	50V
C59	NCT03CH-330	CER.CAPACITOR	33P	50V (U)
C60	NCB21EK-473	CER.CAPACITOR	0.047	25V
C61	NCT03CH-680	CER.CAPACITOR	68P	50V
C62	NCB21EK-473	CER.CAPACITOR	0.047	25V
C63	NCB21EK-473	CER.CAPACITOR	0.047	25V
C64	NCB21EK-473	CER.CAPACITOR	0.047	25V
C65	NCB21EK-473	CER.CAPACITOR	0.047	25V
C66	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C67	NCT03CH-101	CER.CAPACITOR	100P	50V
C70	NCT03CH-2R0	CER.CAPACITOR	2.0P	50V
C71	NCT03CH-560	CER.CAPACITOR	56P	50V
C72	NCT03CH-330	CER.CAPACITOR	33P	50V
C73	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C74	NEA10JM-107	E.CAPACITOR	100	6.3V
C75	NEA11AM-336	E.CAPACITOR	33	10V
C76	NEA11AM-336	E.CAPACITOR	33	10V
C77	NEA10GM-476	E.CAPACITOR	47	4V
C78	NEA11AM-336	E.CAPACITOR	33	10V
C79	NCB21EK-473	CER.CAPACITOR	0.047	25V
C80	NEA11AM-336	E.CAPACITOR	33	10V
C81	NEA11EM-106	E.CAPACITOR	10	25V
C82	NCB21EK-473	CER.CAPACITOR	0.047	25V
C83	NEA10JM-107	E.CAPACITOR	100	6.3V
C84	NEA11EM-106	E.CAPACITOR	10	25V
C86	NEA11EM-106	E.CAPACITOR	10	25V
L1	SCV1950-5R6	PEAKING COIL	5.6μH	
L2	SCV1950-5R6	PEAKING COIL	5.6μH	
L3	SSV1330-150	COIL	15μH	
L4	SSV1330-150	COIL	15μH	
L5	SSV1330-150	COIL	15μH	
L6	SCV1950-121	PEAKING COIL	120μH	
L7	SSV1330-150	COIL	15μH	
DL1	SCV1569-001	DELAY LINE		
DL2	SCV1569-001	DELAY LINE		
DL3	SCV1569-001	DELAY LINE	120nS	
X1	SCV1416-002	CRYSTAL	21.47727MHz	(U)
	SCV1762-001	CRYSTAL		(E)
CN31	SCV1849-016	CONNECTOR	16 PIN	
TP1	SCV1880-001	TEST POINT		
TP2	SCV1880-001	TEST POINT		
TP3	SCV1880-001	TEST POINT		
TP4	SCV1880-001	TEST POINT		
TP5	SCV1880-001	TEST POINT		
TP6	SCV1880-001	TEST POINT		
TP7	SCV1880-001	TEST POINT		
TP8	SCV1201-001	TEST POINT	JVC	

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for U version 〈SCK2314-01-N0A〉 5 8 N ☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
IC1	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC2	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC3	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC4	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC5	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC6	TC4S69F	I.C.(M)	TOSHIBA
IC7	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC101	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC201	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC301	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC501	SCV0322-002	I.C.	JVC
IC502	TC74HC193AF	IC	TOSHIBA
IC503	SN76515P	I.C.(M)	TEXAS
IC504	NJM4560MD	I.C.(M)	JRC
IC505	NJM2904M	I.C.(M)	JRC
IC506	MC14066BF	I.C(DIGI-MOS)	MOTOROLA
IC507	TA7357AP	I.C.(MONO-ANA)	TOSHIBA
IC508	TC74HC4538AF	I.C.(M)	TOSHIBA
IC509	UPC812G2	I.C.(MONO-ANA)	NEC
IC510	TC74HC4538AF	I.C.(M)	TOSHIBA
IC511	NJM2207S	I.C(MONO-ANA)	JRC
IC512	LM319M	I.C.(M)	NATIONAL SEMI
IC513	AN614	I.C(MONO-ANA)	MATSUSHITA
IC514	AN614	I.C(MONO-ANA)	MATSUSHITA
IC515	TC7S00F	I.C.(DIGI-MOS)	TOSHIBA
IC516	TC4S69F	I.C.(M)	TOSHIBA
IC517	TC4538BF	I.C.(M)	TOSHIBA
IC518	TC40H000F	I.C.(M)	TOSHIBA
IC519	TC40H000F	I.C.(M)	TOSHIBA
IC520	MC14046BF	I.C(DIGI-MOS)	MOTOROLA
IC526	MC74HC02AF	I.C(DIGI-MOS)	MOTOROLA
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q2	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q3	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q4	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q7	2SK374(Q.R)	FET	MATSUSHITA
Q8	2SK374(Q.R)	FET	MATSUSHITA
Q9	2SK374(Q.R)	FET	MATSUSHITA
Q101	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q102	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q103	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q104	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q105	2SK374(Q.R)	FET	MATSUSHITA
Q107	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q108	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q109	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q110	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q111	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q201	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q202	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q203	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q204	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q205	2SK374(Q.R)	FET	MATSUSHITA
Q207	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q208	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q209	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q210	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q211	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q301	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q302	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q303	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q304	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q305	2SK374(Q.R)	FET	MATSUSHITA
Q307	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q308	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q309	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q310	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q311	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q501	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q502	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q503	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q504	2SK374(Q.R)	FET	MATSUSHITA
Q505	2SK374(Q.R)	FET	MATSUSHITA
Q509	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q510	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q512	DTC124EU	TRANSISTOR	ROHM
Q513	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q514	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q515	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q516	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q517	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q518	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q519	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q520	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q521	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q522	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q523	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
D1	MA143A	SI DIODE	MATSUSHITA
D501	MA143A	SI DIODE	MATSUSHITA
D502	SVC321(A)	VARI CAP DIODE	SANYO
D503	SVC321(A)	VARI CAP DIODE	SANYO
D504	MA143A	SI DIODE	MATSUSHITA
D505	MA142A	DIODE	MATSUSHITA
D506	MA143A	SI DIODE	MATSUSHITA
D507	MA142A	DIODE	MATSUSHITA
R5	NRVA02D-2702	M.F.RESISTOR	27K 1/10W
R6	NRVA02D-3301	M.F.RESISTOR	3.3K 1/10W
R7	NRVA02D-3901	M.F.RESISTOR	3.9K 1/10W
R8	NRVA02D-4701	M.F.RESISTOR	4.7K 1/10W
R9	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R10	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R11	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R12	NRVA02D-1801	M.F.RESISTOR	1.8K 1/10W
R13	NRVA02D-68R0	M.F.RESISTOR	68 1/10W
R14	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R15	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R16	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R17	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R20	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R21	NRVA02D-82R0	M.F.RESISTOR	82.0 1/10W
R22	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R23	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R24	NRVA02D-1801	M.F.RESISTOR	1.8K 1/10W

Symbol No.	Part No.	Part Name	Description	
R25	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R26	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R28	NRSA02J-221	M.G.RESISTOR	220	1/10W
R30	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R32	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R33	NRVA02D-1800	M.F.RESISTOR	180	1/10W
R34	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R35	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R36	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R37	NRVA02D-1200	M.F.RESISTOR	120	1/10W
R39	NRSA02J-471	M.G.RESISTOR	470	1/10W
R45	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R46	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R47	NRVA02D-2702	M.F.RESISTOR	27K	1/10W
R48	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R49	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R50	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R51	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R52	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R53	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R54	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R55	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R56	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R57	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R58	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R59	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R60	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R61	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R62	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R63	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R64	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R65	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R66	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R67	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R68	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R69	NRVA02D-3902	M.F.RESISTOR	39K	1/10W
R70	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R71	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R73	NRVA02D-3902	M.F.RESISTOR	39K	1/10W
R74	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R78	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R79	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R80	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R81	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R82	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R83	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R84	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R101	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R102	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R103	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R104	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R105	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R106	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R107	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R108	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R109	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R110	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R111	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R112	NRSA02J-333	M.G.RESISTOR	33K	1/10W

Symbol No.	Part No.	Part Name	Description	
R113	NRSA02J-101	M.G.RESISTOR	100	1/10W
R114	NRSA02J-101	M.G.RESISTOR	100	1/10W
R115	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R116	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R117	NRSA02J-101	M.G.RESISTOR	100	1/10W
R118	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R119	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R120	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R121	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R122	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R123	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R125	NRSA02J-101	M.G.RESISTOR	100	1/10W
R127	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R201	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R202	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R203	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R204	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R205	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R206	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R207	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R208	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R209	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R210	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R211	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R212	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R213	NRSA02J-101	M.G.RESISTOR	100	1/10W
R214	NRSA02J-101	M.G.RESISTOR	100	1/10W
R215	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R216	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R217	NRSA02J-101	M.G.RESISTOR	100	1/10W
R218	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R219	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R220	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R221	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R222	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R223	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R225	NRSA02J-101	M.G.RESISTOR	100	1/10W
R227	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R263	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R264	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R301	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R302	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R303	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R304	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R305	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R306	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R307	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R308	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R309	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R310	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R311	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R312	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R313	NRSA02J-101	M.G.RESISTOR	100	1/10W
R314	NRSA02J-101	M.G.RESISTOR	100	1/10W
R315	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R316	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R317	NRSA02J-101	M.G.RESISTOR	100	1/10W
R318	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R319	NRSA02J-184	M.G.RESISTOR	180K	1/10W

Symbol No.	Part No.	Part Name	Description	
R320	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R321	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R322	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R323	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R325	NRSA02J-101	M.G.RESISTOR	100	1/10W
R327	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R501	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R502	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R504	NRSA02J-221	M.G.RESISTOR	220	1/10W
R505	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R507	NRSA02J-221	M.G.RESISTOR	220	1/10W
R508	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R509	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R510	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R511	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R512	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R513	NRSA02J-100	M.G.RESISTOR	10	1/10W
R514	NRVA02D-5602	M.F.RESISTOR	56K	1/10W
R515	NRVA02D-5602	M.F.RESISTOR	56K	1/10W
R516	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R517	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R518	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R519	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R520	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R521	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R522	NRVA02D-3902	M.F.RESISTOR	39K	1/10W
R523	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R524	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R525	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R526	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R527	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R528	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R529	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R530	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R532	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R533	NRVA02D-2702	M.F.RESISTOR	27K	1/10W
R534	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R535	NRSA02J-823	M.G.RESISTOR	82K	1/10W
R536	NRVA02D-5602	M.F.RESISTOR	56K	1/10W
R538	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R539	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R540	NRVA02D-3902	M.F.RESISTOR	39K	1/10W
R542	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R543	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R544	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R545	NRSA02J-101	M.G.RESISTOR	100	1/10W
R546	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R547	NRVA02D-3300	M.F.RESISTOR	330	1/10W
R548	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R549	NRSA02J-101	M.G.RESISTOR	100	1/10W
R550	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R551	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R552	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R553	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R554	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R555	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R556	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R557	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R558	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R559	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R560	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R562	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R563	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R564	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R565	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R566	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R567	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R568	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R569	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R571	NRSA02J-101	M.G.RESISTOR	100	1/10W
R572	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R573	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R574	NRVA02D-3901	M.F.RESISTOR	3.9K	1/10W
R575	NRSA02J-220	M.G.RESISTOR	22	1/10W
R576	NRSA02J-220	M.G.RESISTOR	22	1/10W
R577	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R578	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R579	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R580	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R581	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R582	NRSA02J-471	M.G.RESISTOR	470	1/10W
R583	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R586	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R587	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R589	NRSA02J-471	M.G.RESISTOR	470	1/10W
R594	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R596	NRSA02J-100	M.G.RESISTOR	10	1/10W
R597	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R598	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R599	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R600	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R601	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R602	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R603	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R604	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R605	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R607	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R608	NRSA02J-471	M.G.RESISTOR	470	1/10W
R609	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R610	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R611	NRSA02J-471	M.G.RESISTOR	470	1/10W
R612	NRSA02J-471	M.G.RESISTOR	470	1/10W
R613	NRSA02J-471	M.G.RESISTOR	470	1/10W
R614	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R615	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R616	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R617	NRVA02D-2202	M.F.RESISTOR	22K	1/10W
R618	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R622	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R623	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R624	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R625	NRSA02J-823	M.G.RESISTOR	82K	1/10W
R626	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R627	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R628	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R630	NRVA02D-2702	M.F.RESISTOR	27K	1/10W
R631	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R632	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W

Symbol No.	Part No.	Part Name	Description	
R633	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R634	NRVA02D-4701	M.F.RESISTOR	4.7K	1/10W
R635	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R636	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R637	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R638	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R639	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R640	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R641	NRVA02D-3902	M.F.RESISTOR	39K	1/10W
R642	NRVA02D-1501	M.F.RESISTOR	1.5K	1/10W
R643	NRVA02D-3301	M.F.RESISTOR	3.3K	1/10W
R644	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R645	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R646	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R647	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R648	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R649	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R650	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R651	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R652	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R655	NRVA02D-3300	M.F.RESISTOR	330	1/10W
R656	NRVA02D-2702	M.F.RESISTOR	27K	1/10W
R660	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R661	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R662	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R663	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R667	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R668	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R669	NRVA02D-2700	M.F.RESISTOR	270	1/10W
VR1	NVP1415-502	TRIM.RESISTOR	5K	SYNC LEVL
VR2	NVP1415-501	TRIM.RESISTOR	500	Y LEVEL
VR4	NVP1415-201NZ	V.RESISTOR		
VR5	NVP1415-502	TRIM.RESISTOR	5K	BURST LVL
VR6	NVP1415-202	TRIM.RESISTOR	2K	W.CLIP
VR7	NVP1415-501	TRIM.RESISTOR	5K	BLK SLICE
VR501	NVP1415-102	V.RESISTOR	1K	R-Y C.BAL
VR502	NVP1415-102	V.RESISTOR	1K	B-Y C.BAL
VR503	NVP1415-102	V.RESISTOR	1K	QUAD
VR504	NVP1415-501	TRIM.RESISTOR	500	CHROMA LVL
VR505	QVPB609-203	VR	20K	H PHASE
VR506	QVPB609-202	VR	2.0K	SC FINE
C1	NCB21EK-473	CER.CAPACITOR	0.047	25V
C2	NEA11AM-336	E.CAPACITOR	33	10V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCB21EK-473	CER.CAPACITOR	0.047	25V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NCB21EK-473	CER.CAPACITOR	0.047	25V
C13	NCB21EK-473	CER.CAPACITOR	0.047	25V
C14	NCB21EK-473	CER.CAPACITOR	0.047	25V
C15	NCB21EK-473	CER.CAPACITOR	0.047	25V
C16	NCB21EK-473	CER.CAPACITOR	0.047	25V
C17	NCB21EK-473	CER.CAPACITOR	0.047	25V
C18	NCB21EK-473	CER.CAPACITOR	0.047	25V
C19	NEA11AM-336	E.CAPACITOR	33	10V
C20	NCB21HK-103	CER.CAPACITOR	0.010	50V
C21	NCB21EK-473	CER.CAPACITOR	0.047	25V
C22	NCB21EK-473	CER.CAPACITOR	0.047	25V
C23	NCB21EK-473	CER.CAPACITOR	0.047	25V
C24	NCT03CH-330	CER.CAPACITOR	33P	50V
C25	NCT03CH-330	CER.CAPACITOR	33P	50V
C27	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCT03CH-150	CER.CAPACITOR	15P	50V
C30	NCT03CH-7R0	CER.CAPACITOR	7.0P	50V
C32	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C34	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C35	NCT03CH-150	CER.CAPACITOR	15P	50V
C36	NEN10JM-476	E.CAPACITOR	47	6.3V
C37	NCT03CH-680	CER.CAPACITOR	68P	50V
C38	NCT03CH-121	CER.CAPACITOR	120P	50V
C39	NCT03CH-560	CER.CAPACITOR	56P	50V
C40	NCT03CH-121	CER.CAPACITOR	120P	50V
C41	NCT03CH-560	CER.CAPACITOR	56P	50V
C43	NCT03CH-470	CER.CAPACITOR	47P	50V
C44	NCT03CH-470	CER.CAPACITOR	47P	50V
C45	NCT03CH-470	CER.CAPACITOR	47P	50V
C46	NCT03CH-470	CER.CAPACITOR	47P	50V
C101	NEA11AM-336	E.CAPACITOR	33	10V
C102	NEA11AM-336	E.CAPACITOR	33	10V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C104	NCB21HK-223	CER.CAPACITOR	0.022	50V
C105	NEA11AM-336	E.CAPACITOR	33	10V
C106	NCB21EK-473	CER.CAPACITOR	0.047	25V
C107	NEA11AM-336	E.CAPACITOR	33	10V
C108	NCB21EK-473	CER.CAPACITOR	0.047	25V
C109	NCT03CH-150	CER.CAPACITOR	15P	50V
C110	NCT03CH-150	CER.CAPACITOR	15P	50V
C111	NCT03CH-101	CER.CAPACITOR	100P	50V
C112	NCT03CH-470	CER.CAPACITOR	47P	50V
C201	NEA11AM-336	E.CAPACITOR	33	10V
C202	NEA11AM-336	E.CAPACITOR	33	10V
C204	NCB21HK-223	CER.CAPACITOR	0.022	50V
C205	NEA11AM-336	E.CAPACITOR	33	10V
C207	NEA11AM-336	E.CAPACITOR	33	10V
C209	NCT03CH-150	CER.CAPACITOR	15P	50V
C210	NCT03CH-150	CER.CAPACITOR	15P	50V
C212	NCT03CH-470	CER.CAPACITOR	47P	50V
C301	NEA11AM-336	E.CAPACITOR	33	10V
C302	NEA11AM-336	E.CAPACITOR	33	10V
C304	NCB21HK-223	CER.CAPACITOR	0.022	50V
C305	NEA11AM-336	E.CAPACITOR	33	10V
C307	NEA11AM-336	E.CAPACITOR	33	10V
C309	NCT03CH-150	CER.CAPACITOR	15P	50V
C310	NCT03CH-150	CER.CAPACITOR	15P	50V
C311	NCT03CH-101	CER.CAPACITOR	100P	50V
C312	NCT03CH-470	CER.CAPACITOR	47P	50V
C501	NEA11AM-336	E.CAPACITOR	33	10V
C502	NCB21EK-473	CER.CAPACITOR	0.047	25V
C503	NCB21EK-473	CER.CAPACITOR	0.047	25V
C504	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C505	NCB21EK-473	CER.CAPACITOR	0.047	25V
C506	NCB21EK-473	CER.CAPACITOR	0.047	25V
C507	NCB21EK-473	CER.CAPACITOR	0.047	25V
C508	NEA11AM-336	E.CAPACITOR	33	10V
C509	NCT03CH-680	CER.CAPACITOR	68P	50V
C510	NCT03CH-470	CER.CAPACITOR	47P	50V
C511	NCB21EK-473	CER.CAPACITOR	0.047	25V
C512	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C513	NCT03CH-681	CER.CAPACITOR	680P	50V
C514	NCB21HK-472	CER.CAPACITOR	4700P	50V
C515	NEA11HM-105	E.CAPACITOR	1.0	50V
C516	NEN11HM-105	E.CAPACITOR	1.0	50V
C517	NEA11AM-336	E.CAPACITOR	33	10V
C518	NCB21EK-473	CER.CAPACITOR	0.047	25V
C519	NCT03CH-101	CER.CAPACITOR	100P	50V
C520	NEA11AM-336	E.CAPACITOR	33	10V
C521	NCB21EK-473	CER.CAPACITOR	0.047	25V
C522	NCT03CH-101	CER.CAPACITOR	100P	50V
C523	NCT03CH-101	CER.CAPACITOR	100P	50V
C524	NEA11EM-106	E.CAPACITOR	10	25V
C525	NCT03CH-271	CER.CAPACITOR	270P	50V
C526	NEA11AM-336	E.CAPACITOR	33	10V
C527	NCB21EK-473	CER.CAPACITOR	0.047	25V
C528	NEA11HM-105	E.CAPACITOR	1.0	50V
C529	NEA11HM-105	E.CAPACITOR	1.0	50V
C530	NCB21EK-473	CER.CAPACITOR	0.047	25V
C531	NCT03CH-270	CER.CAPACITOR	27P	50V
C532	NCB21EK-473	CER.CAPACITOR	0.047	25V
C533	NCB21EK-473	CER.CAPACITOR	0.047	25V
C534	NCB21EK-473	CER.CAPACITOR	0.047	25V
C535	NEA11AM-336	E.CAPACITOR	33	10V
C536	NCB21EK-473	CER.CAPACITOR	0.047	25V
C537	NCB21EK-473	CER.CAPACITOR	0.047	25V
C538	NCB21EK-473	CER.CAPACITOR	0.047	25V
C539	NEA11AM-336	E.CAPACITOR	33	10V
C540	NCB21EK-473	CER.CAPACITOR	0.047	25V
C541	NCB21EK-473	CER.CAPACITOR	0.047	25V
C542	NCT03CH-101	CER.CAPACITOR	100P	50V
C544	NCB21HK-272	CER.CAPACITOR	2700P	50V
C545	NCB21HK-272	CER.CAPACITOR	2700P	50V
C547	NCT03CH-820	CER.CAPACITOR	82P	50V
C548	NCB21EK-473	CER.CAPACITOR	0.047	25V
C549	NCT03CH-100	CER.CAPACITOR	10P	50V
C550	NEA11AM-336	E.CAPACITOR	33	10V
C551	NCB21EK-473	CER.CAPACITOR	0.047	25V
C552	NEA11AM-336	E.CAPACITOR	33	10V
C553	NCB21EK-473	CER.CAPACITOR	0.047	25V
C554	NCB21HK-333	CER.CAPACITOR	0.033	50V
C555	NEF11AM-106	TAN.CAPACITOR	10	10V
C556	NEA11HM-105	E.CAPACITOR	1.0	50V
C557	NCB21EK-473	CER.CAPACITOR	0.047	25V
C558	NCB21EK-473	CER.CAPACITOR	0.047	25V
C559	NCT03CH-270	CER.CAPACITOR	27P	50V
C560	NCB21EK-473	CER.CAPACITOR	0.047	25V
C561	NEA11AM-336	E.CAPACITOR	33	10V
C562	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C563	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C564	NCB21EK-473	CER.CAPACITOR	0.047	25V
C565	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C566	NEA11AM-336	E.CAPACITOR	33	10V
C567	NCB21EK-473	CER.CAPACITOR	0.047	25V
C568	NCB21EK-473	CER.CAPACITOR	0.047	25V
C569	NCB21EK-473	CER.CAPACITOR	0.047	25V
C570	NCB21EK-473	CER.CAPACITOR	0.047	25V
C571	NCT03CH-151	CER.CAPACITOR	150P	50V
C572	NEA11AM-336	E.CAPACITOR	33	10V
C573	NCB21EK-473	CER.CAPACITOR	0.047	25V
C574	NCB21EK-473	CER.CAPACITOR	0.047	25V
C575	NCB21EK-473	CER.CAPACITOR	0.047	25V
C576	NCB21EK-473	CER.CAPACITOR	0.047	25V
C577	NCT03CH-150	CER.CAPACITOR	15P	50V
C578	NCT03CH-820	CER.CAPACITOR	82P	50V
C579	NCT03UJ-560	CER.CAPACITOR	56P	50V
C580	NEA11AM-336	E.CAPACITOR	33	10V
C581	NCB21EK-473	CER.CAPACITOR	0.047	25V
C582	NCT03CH-270	CER.CAPACITOR	27P	50V
C585	NCB21EK-473	CER.CAPACITOR	0.047	25V
C586	NEA11AM-336	E.CAPACITOR	33	10V
C587	NCB21EK-473	CER.CAPACITOR	0.047	25V
C588	NCT03CH-471	CER.CAPACITOR	470P	50V
C589	NCB21EK-473	CER.CAPACITOR	0.047	25V
C590	NCT03CH-471	CER.CAPACITOR	470P	50V
C591	NEA11AM-336	E.CAPACITOR	33	10V
C593	NEN10JM-476	E.CAPACITOR	47	6.3V
C594	NCT03CH-100	CER.CAPACITOR	10P	50V
C595	NCT03CH-101	CER.CAPACITOR	100P	50V
C596	NEA11AM-336	E.CAPACITOR	33	10V
C597	NCT03CH-220	CER.CAPACITOR	22P	50V
C598	NCB21EK-473	CER.CAPACITOR	0.047	25V
C599	NCB21EK-473	CER.CAPACITOR	0.047	25V
C600	NCT03CH-820	CER.CAPACITOR	82P	50V
C601	NCT03CH-101	CER.CAPACITOR	100P	50V
C602	NCT03CH-121	CER.CAPACITOR	120P	50V
C603	NCB21EK-473	CER.CAPACITOR	0.047	25V
C605	QCT25CH-150	CER.CAPACITOR	15P	50V
C607	NCB21EK-473	CER.CAPACITOR	0.047	25V
C608	NCT03CH-471	CER.CAPACITOR	470P	50V
VC1	NAT3112-200RZ	TRIM.CAPACITOR	20P 4fsc EXT	
VC2	NAT3112-200RZ	TRIM.CAPACITOR	20P 4fsc INT	
L101	SCV1950-470	PEAKING COIL	47μH	
L103	SCV1950-470	PEAKING COIL	47μH	
L501	SCV1950-220	PEAKING COIL	22μH	
L502	SCV1950-560	PEAKING COIL	56μH	
L503	SCV1950-820	PEAKING COIL	82μH	
L504	SCV1950-120	PEAKING COIL	12μH	
L505	SCV1950-390	PEAKING COIL	39μH	
DL1	SCV1827-001	DELAY LINE	300nsec	
DL101	SCV1570-001	DELAY LINE	160nsec	
DL201	SCV1570-001	DELAY LINE	160nsec	
DL301	SCV1570-001	DELAY LINE	160nsec	
X1	SCV0347-002	CRYSTAL	14.13818 MHz	
X2	SCV0347-002	CRYSTAL	14.13818 MHz	

Symbol No.	Part No.	Part Name	Description
S1	SCV0389-011	SLIDE SWITCH	SC COARSE
S2	QSRAA12-S01	ROTARY SWITCH	AB CHECK
CN29	SCV2089-020	CONNECTOR	20 P HINGE TYPE
CN30	SSV1321-020	CONNECTOR	20 PIN
CN31	SCV1848-016	CONNECTOR	16 PIN
CN32	SCV1770-003	CONNECTOR	3 PIN
TP1	SCV1880-001	TEST POINT	
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP5	SCV1201-001	TEST POINT	JVC
TP6	SCV1880-001	TEST POINT	
TP7	SCV1880-001	TEST POINT	
TP8	SCV1880-001	TEST POINT	
TP9	SCV1880-001	TEST POINT	
TP10	SCV1880-001	TEST POINT	
TP11	SCV1201-001	TEST POINT	JVC
TP12	SCV1201-001	TEST POINT	JVC
TP13	SCV1880-001	TEST POINT	

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〈SCK2315-01-00A〉

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Symbol No.	Part No.	Part Name	Description
IC1	MB89T715APF	I.C(MICRO-PROC)	FUJITSU
IC2	PLSC1065	I.C(EP-ROM)	MBM27C512-20CZ
IC3	LH5116NA-10	I.C(S-RAM)	SHARP
IC4	MC74HC165F	I.C(DIGI-MOS)	MOTOROLA
IC5	MC74HC373AF	I.C(DIGI-MOS)	MOTOROLA
IC6	MC74HC139AF	I.C(DIGI-MOS)	MOTOROLA
IC7	MB89012-109	I.C(DIGI-MOS)	FUJITSU
IC8	MC74HC367F	I.C(DIGI-MOS)	MOTOROLA
IC9	JCS0005	I.C(DIGI-MOS)	JVC
IC11	MC74HC04AF	I.C(DIGI-MOS)	MOTOROLA
IC12	S-2914AIF10-TB	EE P ROM	
IC13	MB88342PF	I.C.(M)	FUJITSU
IC14	NJM062M	I.C.(M)	JRC
IC15	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC16	NJM062M	I.C.(M)	JRC
IC17	NJM062M	I.C.(M)	JRC
IC18	NJM062M	I.C.(M)	JRC
IC19	MC14052BF	I.C(DIGI-MOS)	MOTOROLA
IC20	NJM062M	I.C.(M)	JRC
IC21 •	MC74HC165F	I.C(DIGI-MOS)	MOTOROLA
IC22	S-8054HNCB	I.C.(M)	SEIKO
IC23	TC4066BF	I.C.(M)	TOSHIBA
IC25	NJM2904M	I.C.(M)	JRC
IC28	MC74HC138AF	I.C(DIGI-MOS)	MOTOROLA
IC29	MC74HC04AF	I.C(DIGI-MOS)	MOTOROLA
IC30	MC14094BF	I.C.(M)	MOTOROLA
IC31	TC4S66F	I.C.(M)	TOSHIBA
IC32	TC7S08F	I.C(DIGI-MOS)	TOSHIBA
IC34	MC74HC367F	I.C(DIGI-MOS)	MOTOROLA
IC35	NJM2902M	I.C(MONO-ANA)	JRC
IC36	TC4049BF	IC	TOSHIBA
IC38	RC78L05UA	I.C(MONO-ANA)	RAYTHEON
IC39	MC74HC574AFL	I.C(DIGI-MOS)	MOTOROLA
IC40	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q10	2SC3930(BC)	TRANSISTOR	MATSUSHITA
D3	MA143A	SI DIODE	MATSUSHITA
D4	MA335	SI DIODE	MATSUSHITA
D5	MA142A	DIODE	MATSUSHITA
D6	MA142A	DIODE	MATSUSHITA
D7	MA143A	SI DIODE	MATSUSHITA
D8	MA143A	SI DIODE	MATSUSHITA
D9	MA142A	DIODE	MATSUSHITA
D10	MA142A	DIODE	MATSUSHITA
D13	MA142A	DIODE	MATSUSHITA
D14	MA142A	DIODE	MATSUSHITA
D15	MA143A	SI DIODE	MATSUSHITA
D20	MA143A	SI DIODE	MATSUSHITA
D22	MA143A	SI DIODE	MATSUSHITA
D23	MA143A	SI DIODE	MATSUSHITA
D24	MA143A	SI DIODE	MATSUSHITA
D25	MA142WK	DIODE	MATSUSHITA
R1	NRSA02J-102	M.G.RESISTOR	1.0K 1/10W
R2	NRSA02J-473	M.G.RESISTOR	47K 1/10W

Symbol No.	Part No.	Part Name	Description	
R3	NRSA02J-101	M.G.RESISTOR	100	1/10W
R5	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R6	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R7	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R8	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R9	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R12	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R13	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R14	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R15	NRSA02J-101	M.G.RESISTOR	100	1/10W
R16	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R20	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R21	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R23	NRSA02J-394	M.G.RESISTOR	390K	1/10W
R24	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R25	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R26	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R27	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R42	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R43	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R44	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R45	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R46	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R47	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R49	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R50	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R51	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R52	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R53	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R54	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R55	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R56	NRSA02J-224	M.G.RESISTOR	220K	1/10W
R57	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R58	NRSA02J-334	M.G.RESISTOR	330K	1/10W
R59	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R61	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R62	NRVA02D-6802	M.F.RESISTOR	68.0K	1/10W
R63	NRVA02D-2703	M.F.RESISTOR	270K	1/10W
R64	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R65	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R66	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R67	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R68	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R69	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R70	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R71	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R72	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R73	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R74	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R75	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R76	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R77	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R78	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R79	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R80	NRVA02D-6802	M.F.RESISTOR	68.0K	1/10W
R81	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R82	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R83	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R84	NRSA02J-101	M.G.RESISTOR	100	1/10W

Symbol No.	Part No.	Part Name	Description	
R85	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R87	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R88	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R89	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R90	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R91	NRSA02J-101	M.G.RESISTOR	100	1/10W
R92	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R93	NRVA02D-1801	M.F.RESISTOR	1.8K	1/10W
R94	NRSA02J-101	M.G.RESISTOR	100	1/10W
R95	NRSA02J-101	M.G.RESISTOR	100	1/10W
R96	NRSA02J-101	M.G.RESISTOR	100	1/10W
R100	NRVA02D-2201	M.F.RESISTOR	2.2K	1/10W
R101	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R102	NRSA02J-101	M.G.RESISTOR	100	1/10W
R103	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R105	NRSA02J-101	M.G.RESISTOR	100	1/10W
R106	NRSA02J-220	M.G.RESISTOR	22	1/10W
R107	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R108	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R109	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R110	NRSA02J-101	M.G.RESISTOR	100	1/10W
R111	NRSA02J-101	M.G.RESISTOR	100	1/10W
R112	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R113	NRVA02D-1002	M.F.RESISTOR	10K	1/10W
R115	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R116	NRSA02J-273	M.G.RESISTOR	27K	1/10W
R117	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R118	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R119	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R120	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R122	NRSA02J-101	M.G.RESISTOR	100	1/10W
R123	NRSA02J-101	M.G.RESISTOR	100	1/10W
R124	NRSA02J-220	M.G.RESISTOR	22	1/10W
R125	NRSA02J-101	M.G.RESISTOR	100	1/10W
R126	NRSA02J-101	M.G.RESISTOR	100	1/10W
R127	NRSA02J-101	M.G.RESISTOR	100	1/10W
R128	NRSA02J-101	M.G.RESISTOR	100	1/10W
R129	NRSA02J-101	M.G.RESISTOR	100	1/10W
R130	NRSA02J-101	M.G.RESISTOR	100	1/10W
R131	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R132	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R133	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R134	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R135	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R136	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R137	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R138	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R139	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R140	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R141	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R142	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R143	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R144	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R145	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R146	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R147	NRSA02J-334	M.G.RESISTOR	330K	1/10W
R148	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R149	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R150	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W

Symbol No.	Part No.	Part Name	Description	
R151	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R152	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R153	NRSA02J-101	M.G.RESISTOR	100	1/10W
R154	NRSA02J-101	M.G.RESISTOR	100	1/10W
R155	NRSA02J-101	M.G.RESISTOR	100	1/10W
R157	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R158	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R159	NRVA02D-1003	M.F.RESISTOR	100K	1/10W
R162	NRSA02J-223	M.G.RESISTOR	22K	1/10W
VR1	NVP1415-502	TRIM.RESISTOR	5K	B WHITE
VR2	NVP1415-502	TRIM.RESISTOR	5K	R WHITE
VR3	NVP1415-503	TRIM.RESISTOR	50K	NAM LEVEL
VR5	NVP1415-104	TRIM.RESISTOR	100K	A/D OFFST
C1	NCB21EK-473	CER.CAPACITOR	0.047	25V
C2	NCB21HK-562	CER.CAPACITOR	5600P	50V
C3	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C5	NCT03CH-560	CER.CAPACITOR	56P	50V
C7	NCT03CH-150	CER.CAPACITOR	15P	50V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCT03CH-821	CER.CAPACITOR	820P	50V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCT03CH-181	CER.CAPACITOR	180P	50V
C12	NCT03CH-151	CER.CAPACITOR	150P	50V
C13	NCB21EK-473	CER.CAPACITOR	0.047	25V
C14	NCB21EK-473	CER.CAPACITOR	0.047	25V
C15	NCB21EK-473	CER.CAPACITOR	0.047	25V
C16	NCB21EK-473	CER.CAPACITOR	0.047	25V
C17	NCB21EK-473	CER.CAPACITOR	0.047	25V
C18	NEF11AM-156	TAN.CAPACITOR	15	10V
C19	NCB21EK-473	CER.CAPACITOR	0.047	25V
C20	NCB21EK-473	CER.CAPACITOR	0.047	25V
C21	NCB21EK-473	CER.CAPACITOR	0.047	25V
C22	NCB21EK-473	CER.CAPACITOR	0.047	25V
C23	NCB21EK-473	CER.CAPACITOR	0.047	25V
C24	NCB21EK-473	CER.CAPACITOR	0.047	25V
C26	NCB21EK-473	CER.CAPACITOR	0.047	25V
C27	NCB21EK-473	CER.CAPACITOR	0.047	25V
C28	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCB21EK-473	CER.CAPACITOR	0.047	25V
C31	NCB21EK-393	CER.CAPACITOR	0.039	25V
C33	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C34	NEN11HM-105	E.CAPACITOR	1.0	50V
C35	NCT03CH-150	CER.CAPACITOR	15P	50V
C36	NCB21EK-473	CER.CAPACITOR	0.047	25V
C37	NEF11AM-475	TAN.CAPACITOR	4.7	10V
C38	NEF11VM-105	TAN.CAPACITOR	1.0	35V
C39	NCB21EK-473	CER.CAPACITOR	0.047	25V
C40	NCB21EK-473	CER.CAPACITOR	0.047	25V
C41	NEA11EM-106	E.CAPACITOR	10	25V
C42	NCB21EK-473	CER.CAPACITOR	0.047	25V
C43	NEA11CM-476	E.CAPACITOR	47	16V
C44	NEA10JM-107	E.CAPACITOR	100	6.3V
C45	NEF11AM-156	TAN.CAPACITOR	15	10V
C46	NEA10JM-107	E.CAPACITOR	100	6.3V
C47	NEN11HM-105	E.CAPACITOR	1.0	50V
C49	NCB21EK-473	CER.CAPACITOR	0.047	25V
C50	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description	
C51	NCB21EK-473	CER.CAPACITOR	0.047	25V
C52	NCB21EK-473	CER.CAPACITOR	0.047	25V
C54	NCB21EK-473	CER.CAPACITOR	0.047	25V
C55	NCB21EK-473	CER.CAPACITOR	0.047	25V
C56	NCB21EK-473	CER.CAPACITOR	0.047	25V
C57	NCB21EK-473	CER.CAPACITOR	0.047	25V
C58	NCB21EK-473	CER.CAPACITOR	0.047	25V
C62	NCB21EK-473	CER.CAPACITOR	0.047	25V
C63	NCB21EK-473	CER.CAPACITOR	0.047	25V
C64	NCB21EK-473	CER.CAPACITOR	0.047	25V
C65	NCB21EK-473	CER.CAPACITOR	0.047	25V
C66	NEF11EM-475	TAN.CAPACITOR	4.7	25V
C68	NCB21EK-473	CER.CAPACITOR	0.047	25V
C69	NCB21EK-473	CER.CAPACITOR	0.047	25V
C70	NCB21EK-473	CER.CAPACITOR	0.047	25V
L1	SSV1330-150	COIL	15μH	
L2	SSV1330-150	COIL	15μH	
L3	SCV1950-220	PEAKING COIL	22μH	
L4	SCV1950-4R7	PEAKING COIL	4.7μH	
X1	SCV2029-001	CRYSTAL	7.373MHz	
S1	SCV2247-006	DIP SWITCH	FUNC SET	
S2	SCV2169-001	SLIDE SWITCH	IRIS	
S3	SCV2162-001	SWITCH	LOLUX	
S4	SCV2162-001	SWITCH	SPEED	
S5	SCV0255-001	SLIDE SWITCH	SHUTTER	
CN21	SSV1321-020	CONNECTOR	20PIN	
CN22	SCV2089-020	CONNECTOR	20 PIN HINGE	
CN23	SSV1321-020	CONNECTOR	20 PIN	
CN100	SCV1770-005	CONNECTOR	5 PIN	
TP1	SCV1201-001	TEST POINT	JVC	
TP2	SCV1880-001	TEST POINT		
TP3	SCV1880-001	TEST POINT		
TP4	SCV1880-001	TEST POINT		

6.10 PS board assembly list 6 0

⟨SCK2316-02-00A⟩ 6 0 □□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	MC14001BFL	I.C(DIGI-MOS)	MOTROLA	
IC2	DN819	I.C.(M)	MATSUSHITA	
IC3	NJM79M05FA	IC	JRC	
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q2	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q3	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q4	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q5	2SC3303(Y)	TRANSISTOR	TOSHIBA	
Q6	2SC3303(Y)	TRANSISTOR	TOSHIBA	
D1	MA143A	SI DIODE	MATSUSHITA	
D2	MA142WA	SI DIODE	MATSUSHITA	
⚠ D3	ERA82-004	SI.DIODE	FUJIELECTRIC	
⚠ D4	ERA82-004	SI.DIODE	FUJIELECTRIC	
⚠ D5	ERA82-004	SI.DIODE	FUJIELECTRIC	
⚠ D6	ERA82-004	SI.DIODE	FUJIELECTRIC	
⚠ D7	ERA82-004	SI.DIODE	FUJIELECTRIC	
⚠ D8	ERA82-004	SI.DIODE	FUJIELECTRIC	
⚠ D9	ERA82-004	SI.DIODE	FUJIELECTRIC	
⚠ D10	ERA82-004	SI.DIODE	FUJIELECTRIC	
D11	MA143A	SI DIODE	MATSUSHITA	
D12	MA142WK	DIODE	MATSUSHITA	
R1	NRSA02J-101	M.G.RESISTOR	100	1/10W
R2	NRSA02J-101	M.G.RESISTOR	100	1/10W
R3	NRSA02J-471	M.G.RESISTOR	470	1/10W
R4	NRSA02J-471	M.G.RESISTOR	470	1/10W
R5	NRSA02J-180	M.G.RESISTOR	18	1/10W
C1	NCB21EK-473	CER.CAPACITOR	0.047	25V
C2	QER41EM-106	E.CAPACITOR	10	25V
C3	QER41EM-106	E.CAPACITOR	10	25V
C4	QETA1AM-477	E.CAPACITOR	470	10V
C5	QETA1AM-477	E.CAPACITOR	470	10V
C6	QETA1AM-477	E.CAPACITOR	470	10V
C7	QETA1EM-477	E.CAPACITOR	470	25V
C8	QETA1CM-337	E.CAPACITOR	330	16V
C9	QETA1AM-477	E.CAPACITOR	470	10V
C10	QETA1AM-477	E.CAPACITOR	470	10V
C11	QETA1EM-477	E.CAPACITOR	470	25V
C12	QETA1CM-337	E.CAPACITOR	330	16V
C13	QETA0JM-337	E.CAPACITOR	330	6.3V
C14	QFN41HJ-392	MYLAR CAPACITOR	3900P	50V
L1	SCV0983-500	PEAKING COIL	50μH	
L2	SCV0983-500	PEAKING COIL	50μH	
L3	SCV0983-500	PEAKING COIL	50μH	
L4	SCV0983-500	PEAKING COIL	50μH	
L5	SCV0983-500	PEAKING COIL	50μH	
CN52	SSV1591-S10	CONNECTOR		
TP1	SCV1397	TEST POINT		
⚠ CP1	ICP-F10	I.C.PROTECTOR		
⚠ CP2	ICP-F10	I.C.PROTECTOR		
⚠ CP3	ICP-F10	I.C.PROTECTOR		
⚠ CP4	ICP-F10	I.C.PROTECTOR		
⚠ T1	SCV2033-001	DC-DC TRANS		

6.11 AU board assembly list 6 1

⟨SCK2314-06-00A⟩ 6 1 □□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	NJM2068MD	I.C(MONO-ANA)	JRC	
D1	MA143A	SI DIODE	MATSUSHITA	
D2	MA143A	SI DIODE	MATSUSHITA	
R1	NRSA02J-100	M.G.RESISTOR	10	1/10W
R2	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R3	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R4	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R5	NRSA02J-101	M.G.RESISTOR	100	1/10W
R6	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R7	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R8	NRSA02J-101	M.G.RESISTOR	100	1/10W
R9	NRVA02D-1001	M.F.RESISTOR	1.0K	1/10W
R10	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R11	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R12	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
R13	NRVA02D-68R0	M.F.RESISTOR	68	1/10W
C1	NEA11AM-336	E.CAPACITOR	33	10V
C2	NCT03CH-681	CER.CAPACITOR	680P	50V
C3	NCT03CH-681	CER.CAPACITOR	680P	50V
C4	NEA11EM-106	E.CAPACITOR	10	25V
C5	NEA11EM-106	E.CAPACITOR	10	25V
C6	NEA11AM-336	E.CAPACITOR	33	10V
C7	NCB21HK-222	CER.CAPACITOR	2200P	50V
C8	NCB21HK-222	CER.CAPACITOR	2200P	50V
C9	NEA11AM-336	E.CAPACITOR	33	10V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NEA11EM-106	E.CAPACITOR	10	25V
C12	NEA11EM-106	E.CAPACITOR	10	25V
CN26	SCV1770-004	CONNECTOR	4 pin	
CN27	SCV1770-006	CONNECTOR	6 pin	

6.12 MT board assembly list 6 2
〈SCK2316-01-00A〉

6 2 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
⚠IC1	SCV2241-001	DC-DC CONV.(5V)	+5V REGURATOR
Q1	DTA124EU	D.TRANSISTER	ROHM
Q2	DTC124EU	TRANSISTOR	ROHM
Q3	DTA124EU	D.TRANSISTER	ROHM
Q4	DTC124EU	TRANSISTOR	ROHM
D1	SB140	SI.DIODE	GENERAL INST
D2	MA143A	SI DIODE	MATSUSHITA
D3	MA143A	SI DIODE	MATSUSHITA
D4	ERA82-004	SI.DIODE	FUJIELECTRIC
D5	ERA82-004	SI.DIODE	FUJIELECTRIC
D6	ERA82-004	SI.DIODE	FUJIELECTRIC
R1	QRD161J-102	CARBON RESISTOR	1.0K 1/6W
R2	QRD161J-102	CARBON RESISTOR	1.0K 1/6W
C1	QEU41EM-477	E.CAPACITOR	470 25V
C2	QEU41EM-477	E.CAPACITOR	470 25V
C3	QER41CM-107	E.CAPACITOR	100 16V
C4	QEU41EM-477	E.CAPACITOR	470 25V
C5	QEX41AK-226	E.CAPACITOR	22 10V
C6	QEX41AK-226	E.CAPACITOR	22 10V
C7	QEXA1CM-107	E.CAPACITOR	100 16V
C8	QEXA1CM-107	E.CAPACITOR	100 16V
L1	SCV0983-500	PEAKING COIL	50 μH
L2	SCV0983-500	PEAKING COIL	50 μH
⚠LC1	EXC-EMT102BT	LC FILTER	
CN1	SSV1209-L04	CONNECTOR	JVC
CN2	SCV1766-020	CONNECTOR	20 PIN
CN20	SCV2096-060	CONNECTOR	60 PIN
CN21	SCV1766-020	CONNECTOR	20 PIN
CN22	SCV2088-020	CONNECTOR	20 P HINGE TYPE
CN23	SCV1766-020	CONNECTOR	20 PIN
CN24	SSV1591-L10	CONNECTOR	10 PIN
CN25	SCV1978-L03	CONNECTOR	3 PIN
CN26	SCV1978-L04	CONNECTOR	4 PIN
CN28	SSV1591-L03	CONNECTOR	3 PIN
CN29	SCV2088-020	CONNECTOR	20 P HINGE TYPE
CN30	SCV1766-020	CONNECTOR	20 PIN
CN33	SSV1283-002	CONNECTOR	2 PIN
CN36	SCV1766-010	CONNECTOR	10 PIN

6.13 REG board assembly list 6 3
〈SCK2316-04-00A〉

6 3 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
⚠IC1	SI-3090C	I.C.(M)	SANKEN
C1	QCZ0206-104	CER.CAPACITOR	0.10
C2	QCZ0206-104	CER.CAPACITOR	0.10
CN28	SSV1591-S03	CONNECTOR	3 PIN

6.14 LE board assembly list 6 4
〈SCK2316-05-00A〉

6 4 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
D1	MA143A	SI DIODE	MATSUSHITA
D2	MA143A	SI DIODE	MATSUSHITA
D3	MA143A	SI DIODE	MATSUSHITA
D4	MA143A	SI DIODE	MATSUSHITA
J4	SCV1743-001	CONNECTOR	
CN14	SCV1766-010	CONNECTOR	10 PIN
AN4	SC45205-003	C.WIRE ASS'Y	

6.15 SW1 board assembly list 6 5
〈SCK2316-06-00A〉

6 5 ☐☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
S11	SCV1639-001	PUSH SWITCH	VTR
S12	SCV0516-A18JB2	TOGGLE SWITCH	AUTO WHT/SET
S13	SCV0337-002	TOGGLE SWITCH	ZEBRA
CN15	SCV1766-008	CONNECTOR	8 PIN

6.16 SW2 board assembly list 66
⟨SCK2316-07-00A⟩

66□□□□□□

Symbol No.	Part No.	Part Name	Description
LD1	SLB-26UR5	LED	POWER
R1	QRD161J-152	CARBON RESISTOR	1.5K 1/6W
S2	SC43656-175	SPACER	
S21	SCV1313-001	TOGGLE SWITCH	OPERATE
CN33	SSV1209-L02	CONNECTOR	2 PIN
CN34	SCV1978-L02	CONNECTOR	2 PIN

6.17 SW3 board assembly list 67
⟨SCK2316-08-00A⟩

67□□□□□□

Symbol No.	Part No.	Part Name	Description
S31	SCV1639-001	PUSH SWITCH	Q REC
CN34	SCV1978-L02	CONNECTOR	2 PIN
CN35	SCV1978-L03	CONNECTOR	3 PIN

6.18 SW4 board assembly list 68
⟨SCK2316-09-00A⟩

68□□□□□□

Symbol No.	Part No.	Part Name	Description
S41	SCV0516-A13HB2	TOGGLE SWITCH	GAIN
S42	SCV0516-A18JB2	TOGGLE SWITCH	DISP SELECT
S43	SCV0337-002	TOGGLE SWITCH	MODE CAM/BAR
S44	SCV0338-002	TOGGLE SWITCH	W.BAL
CN35	SCV1978-L03	CONNECTOR	3 PIN
CN36	SCV1766-010	CONNECTOR	10 PIN

6.19 SW5 board assembly list 69
⟨SCK2316-10-00A⟩

69□□□□□□

Symbol No.	Part No.	Part Name	Description
S51	SCV1639-001	PUSH SWITCH	FWD (ED.SERCH)
S52	SCV1639-001	PUSH SWITCH	REV (ED.SERCH)
CN25	SCV1978-L03	CONNECTOR	3 PIN

6.20 BNC board assembly list 70
⟨SCK2316-11-00A⟩

70□□□□□□

Symbol No.	Part No.	Part Name	Description
R1	QRD161J-750	CARBON RESISTOR	75 1/6W
R2	QRD161J-102	CARBON RESISTOR	1.0K 1/6W
CN32	SCV1978-L03	CONNECTOR	GENLOCK INPUT

6.1 P.DR [PAL] board assembly list 5 1 P
for E version 〈SCK2315-03-P0A〉 5 1 P ☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
IC1	UPD9318GB	I.C(DIGI-MOS)	NEC	
IC2	UPD9328AGK-BE9	I.C(DIGI-MOS)	NEC	
IC3	UPD16501GS	I.C(DIGI-MOS)	NEC	
IC4	UPD16501GS	I.C(DIGI-MOS)	NEC	
IC5	UPD16501GS	I.C(DIGI-MOS)	NEC	
IC6	MC74HC08AF	I.C.(M)	MOTOROLA	
IC7	TC7SU04F	I.C(DIGI-MOS)	TOSHIBA	
IC8	TC7S02F	I.C.(M)	TOSHIBA	
IC9	TC4S81F	I.C(DIGI-MOS)	TOSHIBA	
IC10	TC7SU04F	I.C(DIGI-MOS)	TOSHIBA	
IC11	MC74HC14AF	I.C.(M)	MOTOROLA	
IC12	TC7S08F	I.C(DIGI-MOS)	TOSHIBA	
IC13	TC7S32F	I.C.(M)	TOSHIBA	
IC14	RC78L15UA	I.C.(MONO-ANA)	RAYTHEON	
IC18	TC40H032F	I.C(DIGI-MOS)	TOSHIBA	
IC19	MC74HC08AF	I.C.(M)	MOTOROLA	
IC20	MC74HC02AF	I.C(DIGI-MOS)	MOTOROLA	
Q1	DTC124EU	TRANSISTOR	ROHM	
Q2	2SD1820(QR)	TRANSISTOR	MATSUSHITA	
Q3	2SD1820(QR)	TRANSISTOR	MATSUSHITA	
Q4	2SD1820(QR)	TRANSISTOR	MATSUSHITA	
Q5	2SD874(QR)	TRANSISTOR	MATSUSHITA	
Q6	2SD874(QR)	TRANSISTOR	MATSUSHITA	
Q7	2SB766(QR)	TRANSISTOR	MATSUSHITA	
Q9	2SB766(QR)	TRANSISTOR	MATSUSHITA	
Q10	2SC3930(BC)	TRANSISTOR	MATSUSHITA	
Q11	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA	
Q12	2SB1219(QR)	TRANSISTOR	MATSUSHITA	
Q13	2SD1820(QR)	TRANSISTOR	MATSUSHITA	
D1	MA335	SI DIODE	MATSUSHITA	
D2	MA142A	DIODE	MATSUSHITA	
D3	HSM88AS	SI DIODE	HITACHI	
D4	MA142A	DIODE	MATSUSHITA	
D5	MA142A	DIODE	MATSUSHITA	
D6	MA142A	DIODE	MATSUSHITA	
D7	MA142A	DIODE	MATSUSHITA	
D8	MA335	SI DIODE	MATSUSHITA	
D10	MA142A	DIODE	MATSUSHITA	
D16	MA142A	DIODE	MATSUSHITA	
D18	RD16MB1	ZENER DIODE	NEC	
R1	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
R2	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
R3	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
R4	NRSA02J-220	M.G.RESISTOR	22	1/10W
R5	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
R6	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
R7	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
R9	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R10	NRSA02J-220	M.G.RESISTOR	22	1/10W
R11	NRSA02J-220	M.G.RESISTOR	22	1/10W
R12	NRSA02J-220	M.G.RESISTOR	22	1/10W
R13	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R14	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R16	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R17	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R18	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R19	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R20	NRSA02J-561	M.G.RESISTOR	560	1/10W
R21	NRSA02J-331	M.G.RESISTOR	330	1/10W
R22	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R23	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R26	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R27	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R29	NRSA02J-220	M.G.RESISTOR	22	1/10W
R30	NRSA02J-221	M.G.RESISTOR	220	1/10W
R31	NRSA02J-221	M.G.RESISTOR	220	1/10W
R32	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R33	NRSA02J-100	M.G.RESISTOR	10	1/10W
R34	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R35	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R36	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R37	NRSA02J-100	M.G.RESISTOR	10	1/10W
R38	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R39	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R40	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R41	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R42	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R43	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R44	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R45	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R46	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R47	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R48	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R49	NRSA02J-221	M.G.RESISTOR	220	1/10W
R50	NRSA02J-221	M.G.RESISTOR	220	1/10W
R51	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R52	NRSA02J-393	M.G.RESISTOR	39K	1/10W
R53	NRSA02J-103	M.G.RESISTOR	10K	1/10W
R60	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R61	NRSA02J-392	M.G.RESISTOR	3.9K	1/10W
R62	NRSA02J-101	M.G.RESISTOR	100	1/10W
R63	NRSA02J-332	M.G.RESISTOR	3.3K	1/10W
R64	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R68	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R69	NRSA02J-472	M.G.RESISTOR	4.7K	1/10W
R70	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R72	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R73	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R75	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R78	NRSA02J-220	M.G.RESISTOR	22	1/10W
R80	NRSA02J-102	M.G.RESISTOR	1.0K	1/10W
R81	NRSA02J-101	M.G.RESISTOR	100	1/10W
R85	NRSA02J-223	M.G.RESISTOR	22K	1/10W
R86	NRSA02J-560	M.G.RESISTOR	56	1/10W
R87	NRSA02J-560	M.G.RESISTOR	56	1/10W
R88	NRSA02J-560	M.G.RESISTOR	56	1/10W
R89	NRSA02J-560	M.G.RESISTOR	56	1/10W
R90	NRSA02J-560	M.G.RESISTOR	56	1/10W
R91	NRSA02J-560	M.G.RESISTOR	56	1/10W
R92	NRSA02J-4R7	M.G.RESISTOR	4.7	1/10W
VR1	NVP1415-203	TRIM.RESISTOR	20K	Eoo
VR2	NVP1415-102	V.RESISTOR	1K	SHP
VR3	NVP1415-102	V.RESISTOR	1K	CP

Symbol No.	Part No.	Part Name	Description	
VR4	NVP1415-102	V.RESISTOR	1K	HP
VR5	NVP1415-203	TRIM.RESISTOR	20K	B Vsμb
VR6	NVP1415-203	TRIM.RESISTOR	20K	G Vsμb
VR7	NVP1415-203	TRIM.RESISTOR	20K	R Vsμb
C1	NCB21EK-473	CER.CAPACITOR	0.047	25V
C2	NEA10JM-337	E.CAPACITOR	330	6.3V
C3	NEA10JM-337	E.CAPACITOR	330	6.3V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCT03CH-101	CER.CAPACITOR	100P	50V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NEF11CM-106	TAN.CAPACITOR	10	16V
C13	NEF11AM-225	TAN.CAPACITOR	2.2	10V
C16	NCT03CH-680	CER.CAPACITOR	68P	50V
C17	NCT03CH-680	CER.CAPACITOR	68P	50V
C18	NCB21EK-473	CER.CAPACITOR	0.047	25V
C19	NEA10JM-107	E.CAPACITOR	100	6.3V
C20	NCB21EK-473	CER.CAPACITOR	0.047	25V
C21	NCB21EK-473	CER.CAPACITOR	0.047	25V
C22	NCB21EK-473	CER.CAPACITOR	0.047	25V
C23	NCB21EK-473	CER.CAPACITOR	0.047	25V
C24	NEA11EM-106	E.CAPACITOR	10	25V
C25	NCB21EK-473	CER.CAPACITOR	0.047	25V
C26	NEA11AM-336	E.CAPACITOR	33	10V
C27	NCB21EK-473	CER.CAPACITOR	0.047	25V
C28	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCT03CH-100	CER.CAPACITOR	10P	50V
C30	NCT03CH-100	CER.CAPACITOR	10P	50V
C31	NCT03CH-270	CER.CAPACITOR	27P	50V
C32	NCT03CH-220	CER.CAPACITOR	22P	50V
C33	NCT03CH-100	CER.CAPACITOR	10P	50V
C34	NCB21EK-473	CER.CAPACITOR	0.047	25V
C35	NCB21EK-473	CER.CAPACITOR	0.047	25V
C36	NEA11EM-106	E.CAPACITOR	10	25V
C37	NCB21EK-473	CER.CAPACITOR	0.047	25V
C38	NCB21EK-473	CER.CAPACITOR	0.047	25V
C39	NCB21EK-473	CER.CAPACITOR	0.047	25V
C40	NCB21EK-473	CER.CAPACITOR	0.047	25V
C41	NCB21EK-473	CER.CAPACITOR	0.047	25V
C42	NCB21EK-473	CER.CAPACITOR	0.047	25V
C43	NEA11EM-106	E.CAPACITOR	10	25V
C44	NEA11CM-226	E.CAPACITOR	22	16V
C45	NEA10JM-107	E.CAPACITOR	100	6.3V
C46	NCB21EK-473	CER.CAPACITOR	0.047	25V
C47	NCB21EK-473	CER.CAPACITOR	0.047	25V
C48	NCT03CH-271	CER.CAPACITOR	270P	50V
C49	NCT03CH-271	CER.CAPACITOR	270P	50V
C50	NCB21EK-473	CER.CAPACITOR	0.047	25V
C51	NEA11EM-106	E.CAPACITOR	10	25V
C52	NEA11EM-106	E.CAPACITOR	10	25V
C53	NCB21EK-473	CER.CAPACITOR	0.047	25V
C54	NEA11AM-336	E.CAPACITOR	33	10V
C55	NEA11EM-226	E.CAPACITOR	22	25V
C56	NEA11EM-226	E.CAPACITOR	22	25V
C57	NEA11EM-226	E.CAPACITOR	22	25V
C59	NCB21EK-473	CER.CAPACITOR	0.047	25V
C62	NCB21EK-473	CER.CAPACITOR	0.047	25V
C63	NCB21EK-473	CER.CAPACITOR	0.047	25V
C64	NEA11EM-106	E.CAPACITOR	10	25V
C65	NEA10JM-107	E.CAPACITOR	100	6.3V
C66	NEA10GM-227	E.CAPACITOR	220	4V
C67	NEA11EM-106	E.CAPACITOR	10	25V
C68	NEA11AM-336	E.CAPACITOR	33	10V
C70	NCB21EK-473	CER.CAPACITOR	0.047	25V
C71	NEA11EM-106	E.CAPACITOR	10	25V
C72	NEA11EM-106	E.CAPACITOR	10	25V
C73	NCB21EK-473	CER.CAPACITOR	0.047	25V
C74	NEA11AM-336	E.CAPACITOR	33	10V
C75	NCB21EK-473	CER.CAPACITOR	0.047	25V
C76	NCB21EK-473	CER.CAPACITOR	0.047	25V
C77	NEA10JM-107	E.CAPACITOR	100	6.3V
C78	NCB21EK-473	CER.CAPACITOR	0.047	25V
C79	NEA11AM-336	E.CAPACITOR	33	10V
C80	NCT03CH-100	CER.CAPACITOR	10P	50V
C81	NCT03CH-100	CER.CAPACITOR	10P	50V
C82	NCB21EK-473	CER.CAPACITOR	0.047	25V
C83	NCB21EK-473	CER.CAPACITOR	0.047	25V
C85	NCB21EK-473	CER.CAPACITOR	0.047	25V
C86	NCB21EK-473	CER.CAPACITOR	0.047	25V
C87	NEA11AM-336	E.CAPACITOR	33	10V
C88	NCT03CH-100	CER.CAPACITOR	10P	50V
L1	SSV1330-150	COIL	15μH	
L5	SCV1950-1R8	PEAKING COIL	1.8μH	
LC1	SCV1804-222	EMI FILTER		
X1	SCV2225-001	CRYSTAL(25.75M)	25.75000MHz	
CN6	SSV1321-014	CONNECTOR	14 PIN	
CN7	SSV1321-014	CONNECTOR	14 PIN	
CN8	SSV1321-014	CONNECTOR	14 PIN	
CN9	SSV1321-020	CONNECTOR	20 PIN	
TP1	SCV1880-001	TEST POINT		

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Symbol No.	Part No.	Part Name	Description
IC1	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC2	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC3	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC4	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC5	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC6	TC4S69F	I.C.(M)	TOSHIBA
IC7	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC101	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC201	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC301	MC14577BF	I.C(MONO-ANA)	MOTOROLA
IC501	JCS0001	I.C(DIGI-MOS)	JVC
IC502	JCS0002	I.C(DIGI-MOS)	JVC
IC503	SN76515P	I.C.(M)	TEXAS
IC504	NJM4560MD	I.C.(M)	JRC
IC505	NJM2904M	I.C.(M)	JRC
IC506	MC14066BF	I.C(DIGI-MOS)	MOTOROLA
IC507	TA7357AP	I.C.(MONO-ANA)	TOSHIBA
IC508	TC74HC4538AF	I.C.(M)	TOSHIBA
IC509	UPC812G2	I.C.(MONO-ANA)	NEC
IC510	TC74HC4538AF	I.C.(M)	TOSHIBA
IC511	NJM2207S	I.C(MONO-ANA)	JRC
IC512	LM319M	I.C.(M)	NATIONAL SEMI
IC513	AN614	I.C(MONO-ANA)	MATSUSHITA
IC514	AN614	I.C(MONO-ANA)	MATSUSHITA
IC515	TC7SU04F	I.C(DIGI-MOS)	TOSHIBA
IC516	TC4S69F	I.C.(M)	TOSHIBA
IC517	TC4538BF	I.C.(M)	TOSHIBA
IC518	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC519	TC4S81F	I.C(DIGI-MOS)	TOSHIBA
IC520	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC521	MC14053BF	I.C(DIGI-MOS)	MOTOROLA
IC522	MC74HC367F	I.C(DIGI-MOS)	MOTOROLA
IC523	NJM4560MD	I.C.(M)	JRC
IC524	TC7SU04F	I.C(DIGI-MOS)	TOSHIBA
IC525	TC4S66F	I.C.(M)	TOSHIBA
IC526	MC74HC02AF	I.C(DIGI-MOS)	MOTOROLA
Q1	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q2	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q3	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q4	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q5	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q6	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q7	2SK374(Q.R)	FET	MATSUSHITA
Q8	2SK374(Q.R)	FET	MATSUSHITA
Q9	2SK374(Q.R)	FET	MATSUSHITA
Q101	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q102	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q103	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q104	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q105	2SK374(Q.R)	FET	MATSUSHITA
Q107	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q108	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q109	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q110	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q111	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q201	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q202	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q203	2SC3930(BC)	TRANSISTOR	MATSUSHITA

Symbol No.	Part No.	Part Name	Description
Q204	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q205	2SK374(Q.R)	FET	MATSUSHITA
Q207	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q208	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q209	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q210	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q211	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q301	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q302	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q303	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q304	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q305	2SK374(Q.R)	FET	MATSUSHITA
Q307	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q308	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q309	2SC3929(ST)	TRANSISTOR	MATSUSHITA
Q310	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q311	2SC3932(ST)	TRANSISTOR	MATSUSHITA
Q501	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q502	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q503	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q504	2SK374(Q.R)	FET	MATSUSHITA
Q505	2SK374(Q.R)	FET	MATSUSHITA
Q509	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q510	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q512	DTC124EU	TRANSISTOR	ROHM
Q513	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q514	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q515	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q516	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q517	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q518	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q519	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
Q520	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q521	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q522	2SC3930(BC)	TRANSISTOR	MATSUSHITA
Q523	2SA1532(BC)	SI.TRANSISTOR	MATSUSHITA
D1	MA143A	SI DIODE	MATSUSHITA
D501	MA143A	SI DIODE	MATSUSHITA
D502	FC-52M	VARI.CAP.DIODE	FUJITSU
D503	MA335	SI DIODE	MATSUSHITA
D504	MA143A	SI DIODE	MATSUSHITA
D505	MA142A	DIODE	MATSUSHITA
D506	MA143A	SI DIODE	MATSUSHITA
D507	MA142A	DIODE	MATSUSHITA
D508	MA142A	DIODE	MATSUSHITA
R7	NRVA02D-3901	M.F.RESISTOR	3.90K 1/10W
R8	NRVA02D-4701	M.F.RESISTOR	4.70K 1/10W
R9	NRVA02D-3900	M.F.RESISTOR	390 1/10W
R10	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R11	NRVA02D-2700	M.F.RESISTOR	270 1/10W
R12	NRVA02D-1801	M.F.RESISTOR	1.80K 1/10W
R13	NRVA02D-68R0	M.F.RESISTOR	68.0 1/10W
R14	NRVA02D-5600	M.F.RESISTOR	560 1/10W
R15	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R16	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R17	NRVA02D-6800	M.F.RESISTOR	680 1/10W
R20	NRVA02D-5600	M.F.RESISTOR	560 1/10W

Symbol No.	Part No.	Part Name	Description	
R21	NRVA02D-82R0	M.F.RESISTOR	82.0	1/10W
R22	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R23	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R24	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R25	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R26	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R27	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R28	NRSA02J-221	M.G.RESISTOR	220	1/10W
R30	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R32	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R33	NRVA02D-1800	M.F.RESISTOR	180	1/10W
R34	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R35	NRVA02D-2700	M.F.RESISTOR	270	1/10W
R36	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R37	NRVA02D-1200	M.F.RESISTOR	120	1/10W
R38	NRVA02D-6800	M.F.RESISTOR	680	1/10W
R39	NRSA02J-471	M.G.RESISTOR	470	1/10W
R45	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R46	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R47	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R48	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R49	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R50	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R51	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R52	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R53	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R54	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R55	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R56	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R57	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R58	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R59	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R60	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R61	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R62	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R63	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R64	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R65	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R66	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R67	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R68	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R69	NRVA02D-3902	M.F.RESISTOR	39.0K	1/10W
R70	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R71	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R73	NRVA02D-3902	M.F.RESISTOR	39.0K	1/10W
R74	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R78	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R79	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R80	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R81	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R82	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R83	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R84	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R85	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R86	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R87	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R88	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R89	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R90	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W

Symbol No.	Part No.	Part Name	Description	
R91	NRSA02J-221	M.G.RESISTOR	220	1/10W
R92	NRVA02D-3901	M.F.RESISTOR	3.90K	1/10W
R93	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R94	NRSA02J-221	M.G.RESISTOR	220	1/10W
R95	NRVA02D-3901	M.F.RESISTOR	3.90K	1/10W
R96	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R97	NRSA02J-221	M.G.RESISTOR	220	1/10W
R98	NRVA02D-3901	M.F.RESISTOR	3.90K	1/10W
R99	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R101	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R102	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R103	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R104	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R105	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R106	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R107	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R108	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R111	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R112	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R113	NRSA02J-101	M.G.RESISTOR	100	1/10W
R114	NRSA02J-101	M.G.RESISTOR	100	1/10W
R115	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R116	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R117	NRSA02J-101	M.G.RESISTOR	100	1/10W
R118	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R119	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R120	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R121	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R122	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R123	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R125	NRSA02J-101	M.G.RESISTOR	100	1/10W
R127	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R201	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R202	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R203	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R204	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R205	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R206	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R207	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R208	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R211	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R212	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R213	NRSA02J-101	M.G.RESISTOR	100	1/10W
R214	NRSA02J-101	M.G.RESISTOR	100	1/10W
R215	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R216	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R217	NRSA02J-101	M.G.RESISTOR	100	1/10W
R218	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R219	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R220	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R221	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R222	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R223	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R225	NRSA02J-101	M.G.RESISTOR	100	1/10W
R227	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R301	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R302	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R303	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R304	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W

Symbol No.	Part No.	Part Name	Description	
R305	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R306	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R307	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R308	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R311	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R312	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R313	NRSA02J-101	M.G.RESISTOR	100	1/10W
R314	NRSA02J-101	M.G.RESISTOR	100	1/10W
R315	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R316	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R317	NRSA02J-101	M.G.RESISTOR	100	1/10W
R318	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R319	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R320	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R321	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R322	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R323	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R325	NRSA02J-101	M.G.RESISTOR	100	1/10W
R327	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R501	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R502	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R504	NRSA02J-221	M.G.RESISTOR	220	1/10W
R505	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R506	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R507	NRSA02J-221	M.G.RESISTOR	220	1/10W
R508	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R509	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R510	NRSA02J-184	M.G.RESISTOR	180K	1/10W
R511	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R512	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R513	NRSA02J-100	M.G.RESISTOR	10	1/10W
R514	NRVA02D-5602	M.F.RESISTOR	56.0K	1/10W
R515	NRVA02D-5602	M.F.RESISTOR	56.0K	1/10W
R516	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R517	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R518	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R519	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R520	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R521	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R522	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R523	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R524	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R525	NRSA02J-822	M.G.RESISTOR	8.2K	1/10W
R526	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R528	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R529	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R530	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R532	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R533	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R534	NRSA02J-333	M.G.RESISTOR	33K	1/10W
R535	NRSA02J-823	M.G.RESISTOR	82K	1/10W
R536	NRVA02D-5602	M.F.RESISTOR	56.0K	1/10W
R538	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R539	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R542	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R543	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R544	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R545	NRSA02J-101	M.G.RESISTOR	100	1/10W
R546	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R547	NRVA02D-3300	M.F.RESISTOR	330	1/10W

Symbol No.	Part No.	Part Name	Description	
R548	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R549	NRSA02J-101	M.G.RESISTOR	100	1/10W
R550	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R551	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R552	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R553	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R555	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R556	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R557	NRVA02D-3901	M.F.RESISTOR	3.90K	1/10W
R560	NRVA02D-3901	M.F.RESISTOR	3.90K	1/10W
R562	NRVA02D-1801	M.F.RESISTOR	1.80K	1/10W
R563	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R564	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R565	NRVA02D-3901	M.F.RESISTOR	3.90K	1/10W
R566	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R567	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R568	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R569	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R570	NRSA02J-221	M.G.RESISTOR	220	1/10W
R571	NRSA02J-221	M.G.RESISTOR	220	1/10W
R572	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R573	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R574	NRVA02D-3901	M.F.RESISTOR	3.90K	1/10W
R575	NRSA02J-220	M.G.RESISTOR	22	1/10W
R576	NRSA02J-220	M.G.RESISTOR	22	1/10W
R577	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R578	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R579	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R580	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R581	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R582	NRVA02D-3900	M.F.RESISTOR	390	1/10W
R583	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R586	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R587	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R589	NRSA02J-471	M.G.RESISTOR	470	1/10W
R594	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R596	NRSA02J-100	M.G.RESISTOR	10	1/10W
R597	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R598	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R599	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R600	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R601	NRSA02J-330	M.G.RESISTOR	33	1/10W
R602	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R603	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R604	NRVA02D-68R0	M.F.RESISTOR	68.0	1/10W
R605	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R607	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R608	NRSA02J-471	M.G.RESISTOR	470	1/10W
R609	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R610	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R611	NRSA02J-471	M.G.RESISTOR	470	1/10W
R612	NRSA02J-471	M.G.RESISTOR	470	1/10W
R613	NRSA02J-471	M.G.RESISTOR	470	1/10W
R614	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R615	NRVA02D-1001	M.F.RESISTOR	1.00K	1/10W
R618	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R620	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R622	NRSA02J-124	M.G.RESISTOR	120K	1/10W
R623	NRSA02J-474	M.G.RESISTOR	470K	1/10W
R624	NRSA02J-123	M.G.RESISTOR	12K	1/10W

Symbol No.	Part No.	Part Name	Description	
R625	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R626	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R627	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R628	NRSA02J-0R0	M.G.RESISTOR	0	1/10W
R629	NRVA02D-3902	M.F.RESISTOR	39.0K	1/10W
R630	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R631	NRSA02J-123	M.G.RESISTOR	12K	1/10W
R632	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R633	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R634	NRVA02D-4701	M.F.RESISTOR	4.70K	1/10W
R635	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R636	NRVA02D-1002	M.F.RESISTOR	10.0K	1/10W
R637	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R638	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R639	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R640	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R641	NRVA02D-3902	M.F.RESISTOR	39.0K	1/10W
R642	NRVA02D-1501	M.F.RESISTOR	1.50K	1/10W
R643	NRVA02D-3301	M.F.RESISTOR	3.30K	1/10W
R644	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R645	NRSA02J-272	M.G.RESISTOR	2.7K	1/10W
R646	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R647	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R648	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R649	NRVA02D-5600	M.F.RESISTOR	560	1/10W
R650	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R651	NRSA02J-122	M.G.RESISTOR	1.2K	1/10W
R652	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R655	NRVA02D-3300	M.F.RESISTOR	330	1/10W
R656	NRVA02D-2702	M.F.RESISTOR	27.0K	1/10W
R660	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R661	NRSA02J-222	M.G.RESISTOR	2.2K	1/10W
R662	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R663	NRVA02D-2202	M.F.RESISTOR	22.0K	1/10W
R664	NRSA02J-101	M.G.RESISTOR	100	1/10W
R665	NRSA02J-101	M.G.RESISTOR	100	1/10W
R670	NRSA02J-562	M.G.RESISTOR	5.6K	1/10W
R671	NRSA02J-221	M.G.RESISTOR	220	1/10W
R672	NRSA02J-153	M.G.RESISTOR	15K	1/10W
R673	NRVA02D-3902	M.F.RESISTOR	39.0K	1/10W
R674	NRSA02J-473	M.G.RESISTOR	47K	1/10W
R675	NRSA02J-183	M.G.RESISTOR	18K	1/10W
R676	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R677	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R678	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R679	NRSA02J-100	M.G.RESISTOR	10	1/10W
R680	NRSA02J-101	M.G.RESISTOR	100	1/10W
R681	NRSA02J-101	M.G.RESISTOR	100	1/10W
R682	NRSA02J-105	M.G.RESISTOR	1.0M	1/10W
R683	NRSA02J-104	M.G.RESISTOR	100K	1/10W
R684	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
R685	NRSA02J-682	M.G.RESISTOR	6.8K	1/10W
VR1	NVP1415-502	TRIM.RESISTOR	5K	SYNC LEVEL
VR2	NVP1415-501	TRIM.RESISTOR	500	Y LEVEL
VR3	NVP1415-501	TRIM.RESISTOR	500	BURST PHASE
VR4	NVP1415-201	V.RESISTOR	200	B-Y LEVEL
VR5	NVP1415-202	TRIM.RESISTOR	2K	BURST LEVEL
VR6	NVP1415-202	TRIM.RESISTOR	2K	W.CLIP

Symbol No.	Part No.	Part Name	Description	
VR7	NVP1415-501	TRIM.RESISTOR	500	BLACK SLICE
VR501	NVP1415-102	V.RESISTOR	1K	U C.BAL
VR502	NVP1415-102	V.RESISTOR	1K	V C.BAL1
VR503	NVP1415-102	V.RESISTOR	1K	QUAD
VR504	NVP1415-501	TRIM.RESISTOR	500	CHROMA LVL
VR505	QVPB609-203	VR	20K	H PHASE
VR506	QVPB609-202	VR	2K	SC FINE
VR507	NVP1415-102	V.RESISTOR	1K	V C.BAL2
C1	NCB21EK-473	CER.CAPACITOR	0.047	25V
C2	NEA11AM-336	E.CAPACITOR	33	10V
C3	NCB21EK-473	CER.CAPACITOR	0.047	25V
C4	NCB21EK-473	CER.CAPACITOR	0.047	25V
C5	NCB21EK-473	CER.CAPACITOR	0.047	25V
C6	NCB21EK-473	CER.CAPACITOR	0.047	25V
C7	NCB21EK-473	CER.CAPACITOR	0.047	25V
C8	NCB21EK-473	CER.CAPACITOR	0.047	25V
C9	NCB21EK-473	CER.CAPACITOR	0.047	25V
C10	NCB21EK-473	CER.CAPACITOR	0.047	25V
C11	NCB21EK-473	CER.CAPACITOR	0.047	25V
C12	NCB21EK-473	CER.CAPACITOR	0.047	25V
C13	NCB21EK-473	CER.CAPACITOR	0.047	25V
C14	NCB21EK-473	CER.CAPACITOR	0.047	25V
C15	NCB21EK-473	CER.CAPACITOR	0.047	25V
C16	NCB21EK-473	CER.CAPACITOR	0.047	25V
C17	NCB21EK-473	CER.CAPACITOR	0.047	25V
C18	NCB21EK-473	CER.CAPACITOR	0.047	25V
C19	NEA11AM-336	E.CAPACITOR	33	10V
C20	NCB21HK-103	CER.CAPACITOR	0.010	50V
C21	NCB21EK-473	CER.CAPACITOR	0.047	25V
C22	NCB21EK-473	CER.CAPACITOR	0.047	25V
C23	NCB21EK-473	CER.CAPACITOR	0.047	25V
C24	NCT03CH-680	CER.CAPACITOR	68P	50V
C27	NCB21EK-473	CER.CAPACITOR	0.047	25V
C29	NCT03CH-150	CER.CAPACITOR	15P	50V
C30	NCT03CH-7R0	CER.CAPACITOR	7.0P	50V
C32	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C34	NCT03CH-5R0	CER.CAPACITOR	5.0P	50V
C35	NCT03CH-150	CER.CAPACITOR	15P	50V
C36	NEN10JM-476	E.CAPACITOR	47	6.3V
C37	NCT03CH-680	CER.CAPACITOR	68P	50V
C38	NCT03CH-121	CER.CAPACITOR	120P	50V
C39	NCT03CH-560	CER.CAPACITOR	56P	50V
C40	NCT03CH-121	CER.CAPACITOR	120P	50V
C41	NCT03CH-560	CER.CAPACITOR	56P	50V
C43	NCT03CH-470	CER.CAPACITOR	47P	50V
C44	NCT03CH-470	CER.CAPACITOR	47P	50V
C45	NCT03CH-470	CER.CAPACITOR	47P	50V
C46	NCT03CH-470	CER.CAPACITOR	47P	50V
C101	NEA11AM-336	E.CAPACITOR	33	10V
C102	NEA11AM-336	E.CAPACITOR	33	10V
C103	NCB21EK-473	CER.CAPACITOR	0.047	25V
C104	NCB21HK-223	CER.CAPACITOR	0.022	50V
C105	NEA11AM-336	E.CAPACITOR	33	10V
C106	NCB21EK-473	CER.CAPACITOR	0.047	25V
C107	NEA11AM-336	E.CAPACITOR	33	10V
C108	NCB21EK-473	CER.CAPACITOR	0.047	25V
C109	NCT03CH-150	CER.CAPACITOR	15P	50V
C110	NCT03CH-150	CER.CAPACITOR	15P	50V

Symbol No.	Part No.	Part Name	Description	
C111	NCT03CH-101	CER.CAPACITOR	100P	50V
C112	NCT03CH-470	CER.CAPACITOR	47P	50V
C201	NEA11AM-336	E.CAPACITOR	33	10V
C202	NEA11AM-336	E.CAPACITOR	33	10V
C204	NCB21HK-223	CER.CAPACITOR	0.022	50V
C205	NEA11AM-336	E.CAPACITOR	33	10V
C207	NEA11AM-336	E.CAPACITOR	33	10V
C209	NCT03CH-150	CER.CAPACITOR	15P	50V
C210	NCT03CH-150	CER.CAPACITOR	15P	50V
C212	NCT03CH-470	CER.CAPACITOR	47P	50V
C301	NEA11AM-336	E.CAPACITOR	33	10V
C302	NEA11AM-336	E.CAPACITOR	33	10V
C304	NCB21HK-223	CER.CAPACITOR	0.022	50V
C305	NEA11AM-336	E.CAPACITOR	33	10V
C307	NEA11AM-336	E.CAPACITOR	33	10V
C309	NCT03CH-150	CER.CAPACITOR	15P	50V
C310	NCT03CH-150	CER.CAPACITOR	15P	50V
C311	NCT03CH-101	CER.CAPACITOR	100P	50V
C312	NCT03CH-470	CER.CAPACITOR	47P	50V
C501	NEA11AM-336	E.CAPACITOR	33	10V
C502	NCB21EK-473	CER.CAPACITOR	0.047	25V
C503	NCB21EK-473	CER.CAPACITOR	0.047	25V
C504	NCB21EK-473	CER.CAPACITOR	0.047	25V
C505	NCB21EK-473	CER.CAPACITOR	0.047	25V
C506	NCB21EK-473	CER.CAPACITOR	0.047	25V
C507	NCB21EK-473	CER.CAPACITOR	0.047	25V
C508	NEA11AM-336	E.CAPACITOR	33	10V
C509	NCT03CH-680	CER.CAPACITOR	68P	50V
C510	NCT03CH-470	CER.CAPACITOR	47P	50V
C511	NCB21EK-473	CER.CAPACITOR	0.047	25V
C512	NEF11CM-105	TAN.CAPACITOR	1.0	16V
C513	NCT03CH-681	CER.CAPACITOR	680P	50V
C514	NCB21HK-222	CER.CAPACITOR	2200P	50V
C515	NEA11HM-105	E.CAPACITOR	1.0	50V
C516	NEN11HM-105	E.CAPACITOR	1.0	50V
C517	NEA11AM-336	E.CAPACITOR	33	10V
C518	NCB21EK-473	CER.CAPACITOR	0.047	25V
C519	NCT03CH-101	CER.CAPACITOR	100P	50V
C520	NEA11AM-336	E.CAPACITOR	33	10V
C521	NCB21EK-473	CER.CAPACITOR	0.047	25V
C522	NCT03CH-101	CER.CAPACITOR	100P	50V
C523	NCT03CH-101	CER.CAPACITOR	100P	50V
C524	NEA11EM-106	E.CAPACITOR	10	25V
C526	NEA11AM-336	E.CAPACITOR	33	10V
C527	NCB21EK-473	CER.CAPACITOR	0.047	25V
C528	NEA11HM-105	E.CAPACITOR	1.0	50V
C529	NEA11HM-105	E.CAPACITOR	1.0	50V
C530	NCB21EK-473	CER.CAPACITOR	0.047	25V
C531	NCT03CH-270	CER.CAPACITOR	27P	50V
C532	NCB21EK-473	CER.CAPACITOR	0.047	25V
C533	NCB21EK-473	CER.CAPACITOR	0.047	25V
C534	NCB21EK-473	CER.CAPACITOR	0.047	25V
C535	NEA11AM-336	E.CAPACITOR	33	10V
C536	NCB21EK-473	CER.CAPACITOR	0.047	25V
C537	NCB21EK-473	CER.CAPACITOR	0.047	25V
C538	NCB21EK-473	CER.CAPACITOR	0.047	25V
C539	NEA11AM-336	E.CAPACITOR	33	10V
C540	NCB21EK-473	CER.CAPACITOR	0.047	25V
C541	NCB21EK-473	CER.CAPACITOR	0.047	25V
C542	NCT03CH-101	CER.CAPACITOR	100P	50V
C543	NCB21EK-473	CER.CAPACITOR	0.047	25V
C544	NCB21HK-272	CER.CAPACITOR	2700P	50V
C545	NCB21HK-272	CER.CAPACITOR	2700P	50V
C546	NCB21EK-473	CER.CAPACITOR	0.047	25V
C547	NCB21EK-473	CER.CAPACITOR	0.047	25V
C548	NEA11AM-336	E.CAPACITOR	33	10V
C549	NCB21EK-473	CER.CAPACITOR	0.047	25V
C550	NCB21EK-473	CER.CAPACITOR	0.047	25V
C551	NCB21EK-473	CER.CAPACITOR	0.047	25V
C552	NCB21EK-473	CER.CAPACITOR	0.047	25V
C554	NCB21HK-333	CER.CAPACITOR	0.033	50V
C555	NEF11AM-106	TAN.CAPACITOR	10	10V
C556	NEA11HM-105	E.CAPACITOR	1.0	50V
C557	NCB21EK-473	CER.CAPACITOR	0.047	25V
C558	NCB21EK-473	CER.CAPACITOR	0.047	25V
C559	NCT03CH-681	CER.CAPACITOR	680P	50V
C560	NCB21EK-473	CER.CAPACITOR	0.047	25V
C561	NEA11AM-336	E.CAPACITOR	33	10V
C562	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C563	NEF11VM-104	TAN.CAPACITOR	0.10	35V
C564	NCB21HK-272	CER.CAPACITOR	2700P	50V
C565	NCB21EK-473	CER.CAPACITOR	0.047	25V
C566	NEA11AM-336	E.CAPACITOR	33	10V
C567	NCB21EK-473	CER.CAPACITOR	0.047	25V
C568	NCB21EK-473	CER.CAPACITOR	0.047	25V
C569	NCB21EK-473	CER.CAPACITOR	0.047	25V
C570	NCB21EK-473	CER.CAPACITOR	0.047	25V
C571	NCT03CH-151	CER.CAPACITOR	150P	50V
C572	NEA11AM-336	E.CAPACITOR	33	10V
C573	NCB21EK-473	CER.CAPACITOR	0.047	25V
C574	NCB21EK-473	CER.CAPACITOR	0.047	25V
C575	NCB21EK-473	CER.CAPACITOR	0.047	25V
C576	NCB21EK-473	CER.CAPACITOR	0.047	25V
C577	NCT03CH-150	CER.CAPACITOR	15P	50V
C578	NCT03CH-330	CER.CAPACITOR	33P	50V
C579	NCT03CH-330	CER.CAPACITOR	33P	50V
C580	NEA11AM-336	E.CAPACITOR	33	10V
C581	NCB21EK-473	CER.CAPACITOR	0.047	25V
C582	NCT03CH-470	CER.CAPACITOR	47P	50V
C583	NCT03CH-680	CER.CAPACITOR	68P	50V
C585	NCB21EK-473	CER.CAPACITOR	0.047	25V
C586	NEA11AM-336	E.CAPACITOR	33	10V
C587	NCB21EK-473	CER.CAPACITOR	0.047	25V
C588	NCT03CH-471	CER.CAPACITOR	470P	50V
C589	NCB21EK-473	CER.CAPACITOR	0.047	25V
C590	NCB21EK-473	CER.CAPACITOR	0.047	25V
C591	NEA11AM-336	E.CAPACITOR	33	10V
C592	NCB21EK-473	CER.CAPACITOR	0.047	25V
C593	NEN10JM-476	E.CAPACITOR	47	6.3V
C594	NCT03CH-100	CER.CAPACITOR	10P	50V
C595	NCT03CH-101	CER.CAPACITOR	100P	50V
C596	NEA11AM-336	E.CAPACITOR	33	10V
C597	NCT03CH-220	CER.CAPACITOR	22P	50V
C598	NCB21EK-473	CER.CAPACITOR	0.047	25V
C599	NCB21EK-473	CER.CAPACITOR	0.047	25V
C600	NCT03CH-820	CER.CAPACITOR	82P	50V
C601	NCT03CH-101	CER.CAPACITOR	100P	50V
C602	NCT03CH-560	CER.CAPACITOR	56P	50V
C603	NCB21EK-473	CER.CAPACITOR	0.047	25V
C604	NCB21EK-473	CER.CAPACITOR	0.047	25V

Symbol No.	Part No.	Part Name	Description
C608	NCT03CH-471	CER.CAPACITOR	470P 50V
C609	NCB21EK-473	CER.CAPACITOR	0.047 25V
C610	NEA11AM-336	E.CAPACITOR	33 10V
C611	NCT03CH-101	CER.CAPACITOR	100P 50V
C612	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C613	NCT03CH-5R0	CER.CAPACITOR	5.0P 50V
C614	NCB21EK-473	CER.CAPACITOR	0.047 25V
C615	NCT03CH-820	CER.CAPACITOR	82P 50V
C616	NCB21EK-473	CER.CAPACITOR	0.047 25V
C617	NCB21EK-473	CER.CAPACITOR	0.047 25V
C618	NCB21EK-473	CER.CAPACITOR	0.047 25V
C619	NEF11AM-106	TAN.CAPACITOR	10 10V
C620	NEN10JM-476	E.CAPACITOR	47 6.3V
C621	NCT03CH-681	CER.CAPACITOR	680P 50V
C622	NCB21EK-473	CER.CAPACITOR	0.047 25V
C623	NCB21EK-473	CER.CAPACITOR	0.047 25V
VC1	NAT3112-200RZ	TRIM.CAPACITOR	20P 4fSC EXT
VC2	NAT3112-200RZ	TRIM.CAPACITOR	20P 4fSC INT
L101	SCV1950-470	PEAKING COIL	47μH
L103	SCV1950-470	PEAKING COIL	47μH
L501	SCV1950-220	PEAKING COIL	22μH
L502	SCV1950-560	PEAKING COIL	56μH
L503	SCV1950-820	PEAKING COIL	82μH
L505	SCV1950-390	PEAKING COIL	39μH
DL1	SCV1827-001	DELAY LINE	300nsec
DL101	SCV1694-001	DELAY LINE	180nsec
DL201	SCV1694-001	DELAY LINE	180nsec
DL301	SCV1694-001	DELAY LINE	180nsec
X1	SCV1316-002	CRYSTAL	27.000MHz
X2	SCV0348-002	CRYSTAL	17.734475MHz
S1	SCV0389-011	SLIDE SWITCH	SC COARSE
S2	QSRAA12-S01	ROTARY SWITCH	AB CHECK
CN29	SCV2089-020	CONNECTOR	20P HINGE TYPE
CN30	SSV1321-020	CONNECTOR	20 PIN
CN31	SCV1848-016	CONNECTOR	16 PIN
CN32	SCV1770-003	CONNECTOR	3 PIN
TP1	SCV1880-001	TEST POINT	
TP2	SCV1880-001	TEST POINT	
TP3	SCV1880-001	TEST POINT	
TP4	SCV1880-001	TEST POINT	
TP5	SCV1201-001	TEST POINT	JVC
TP6	SCV1880-001	TEST POINT	
TP7	SCV1880-001	TEST POINT	
TP8	SCV1880-001	TEST POINT	
TP9	SCV1880-001	TEST POINT	
TP10	SCV1880-001	TEST POINT	
TP11	SCV1201-001	TEST POINT	JVC
TP12	SCV1201-001	TEST POINT	JVC
TP13	SCV1880-001	TEST POINT	

No. 60075R

GY-X2

VTR SECTION

NOTE:

The VTR section of the GY-X2 is what the BR-S422 S-VHS VTR is modified. Therefore, this section describes only the points different from the BR-S422. For further details of the VTR section, refer to the service manual (No. 9277/No. 9288) for the BR-S422U/E issued by JVC Video Communications Division together with Service Bulletins and other information related to the BR-S422.

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3. ELECTRICAL ADJUSTMENT .... (Refer to the section 3 of the Service Manual for BR-S422.)

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SECTION 1
DISASSEMBLY AND SERVICE CAUTIONS

- For separating the VTR section from the camera section, refer to the section 1 "SERVICE CAUTIONS AND DISASSEMBLY" in the first half of this service manual.
- For other items, refer to the section 1 "GENERAL DESCRIPTION AND DISASSEMBLY" of the service manual No. 9277/No. 9288 for the BR-S422U/E.

SECTION 2
MECHANISM ADJUSTMENT

- For mechanism adjustment of the VTR section, refer to the section 2 "MECHANISM ADJUSTMENT" of the service manual No. 9277/No. 9288 for the BR-S422U/E.

SECTION 3
ELECTRICAL ADJUSTMENT

- For electrical adjustment of the VTR section, refer to the section 3 "ELECTRICAL ADJUSTMENT" of the service manual No. 9277/No. 9288 for the BR-S422U/E.

SECTION 4
DIAGRAMS AND CIRCUIT BOARDS

- This section illustrates only the circuit boards different from those of the BR-S422 besides the overall wiring diagram. Circuit boards different from the BR-S422 are as follows.

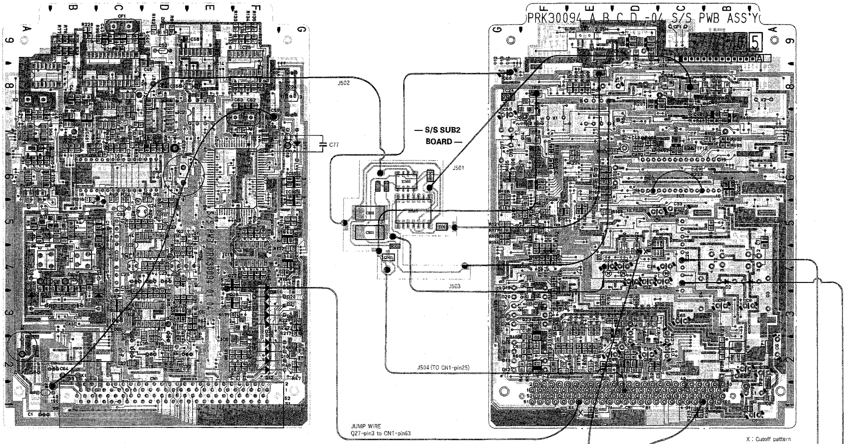
  - S/S board 05 8-2
  - POWER CTL board 14 8-6
  - Overall wiring diagram 8-7

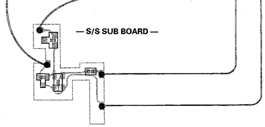
  For other circuit boards, refer to the service manual No. 9277/No. 9288 for the BR-S422 since they are the same as those of the BR-S422.
- The following circuit boards are not used in the GY-X2 since they are provided for exclusive use of the BR-S422.
  - 50-PIN board 16
  - POWER SW board 25

4.1 S/S CIRCUIT BOARD (NTSC)

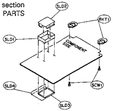
— Component Side (A) —

— Solder Side (B) —

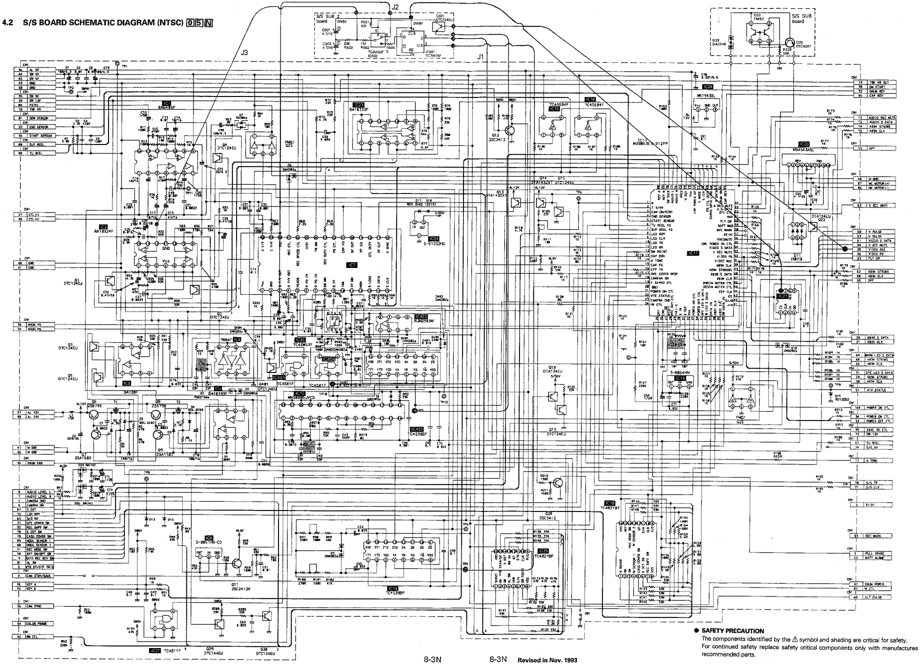

B
C
D
E
F
A
G
9
8
7
6
5
4
3
2
J502
C77
— S/S SUB2 BOARD —
J501
J503
J504 (TO CN1-pin25)
PRK30094 A B C D -04 S/S PWB ASS'Y
CN1
JUMP WIRE
Q27-pin3 to CN1-pin63
X : Cutoff pattern


— S/S SUB BOARD —

- **Shield Case, Brackets on the board**
(For part numbers, refer to the section "6.1 S/S BOARD ASSEMBLY PARTS LIST".


SLD2
BKT1
SLD1
COMPONENT SIDE
SCW1
SLD4
SLD3

4.2 S/S BOARD SCHEMATIC DIAGRAM (NTSC) 0 5 N



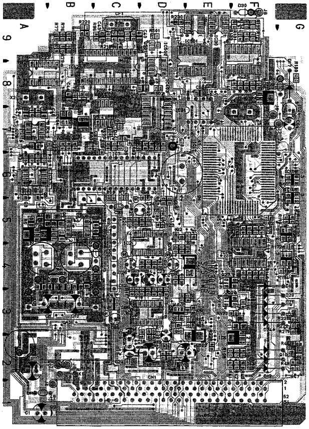
J1
J2
J3
S/S SUB 2 board
S/S SUB board
IC501 TC7W74F
IC502 TC4W53F
Q501 DTC124EU
Q32 FMS2
Q33 2SC4097
D28 DA204K
IC1 BA6415F
IC2 BA10324F
IC3 BA728F
IC4 TC4W84F
IC5 BA10393F
IC6 S-8051HN-CD
IC7
IC12 MN5090S JVES
IC13 TC4538BF
IC17 M38063E5-212FP
IC19 TC4021BF
IC20 M54543ASL
IC21
IC23 BA10339F
IC24 S-81252HG
IC25 TC4021BF
IC26 TC4S53F
IC27 TC4S11F
IC28 M51943BL
IC401 TC4S81F
IC402 NJM2903M
IC403 TC4538BF
IC404
Q1 DTC124EU
Q2 DTC124EU
Q3 DTC124EU
Q4 DTC124EU
Q5 DTC124EU
Q6 2SB798
Q7 2SA1502
Q8 2SB798
Q9 2SA1502
Q11 2SC2412K
Q12 2SC2412
Q13 DTA143ZKT
Q14 DTA143ZKT
Q15 DTC124EU
Q18 DTA124EU
Q19 DTC124EU
Q22 DTA124EU
Q25 FMG1
Q26 FMG1
Q28 2SC2412
Q29 DTC144EU
Q30 DTC124EU
Q401 DTC124EU
CN1
SW5V
AL12V
AL5V

● **SAFETY PRECAUTION**

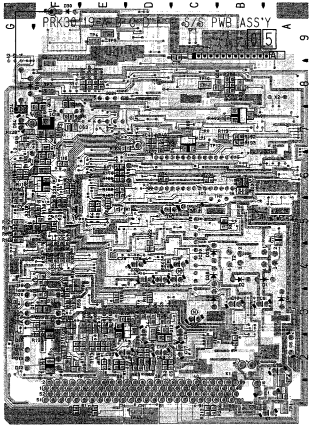
The components identified by the ⚠ symbol and shading are critical for safety.
For continued safety replace safety critical components only with manufactures recommended parts.

4.3 S/S CIRCUIT BOARD (PAL)

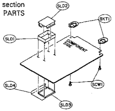
— Component Side (A) —


B
C
D
E
D30
F
G
A
9
8
CN1
C1
X2
R220
R230
R501
IC501
52
51
2
1

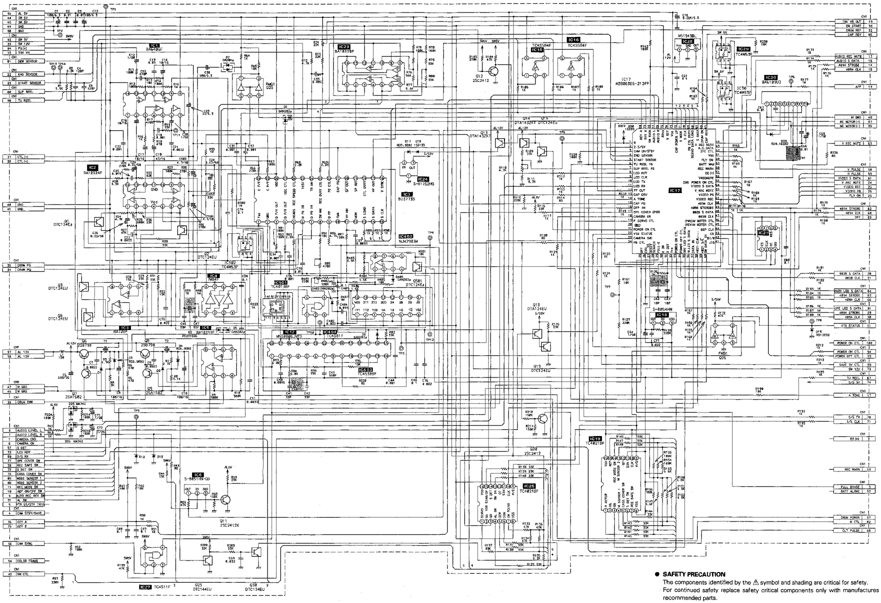
— Solder Side (B) —


F
D30
E
D
C
B
G
A
9
8
PRK30 19-A B C D E F S/S PWB ASS'Y
05
TP4
TP5
IC18
IC7
R113
TP12
K1
CN1
2
1
52
51

• Shield Case, Brackets on the board
(For part numbers, refer to the section "6.1 S/S BOARD ASSEMBLY PARTS LIST".


SLD2
BKT1
SLD1
COMPONENT SIDE
SLD4
SCW1
SLD3

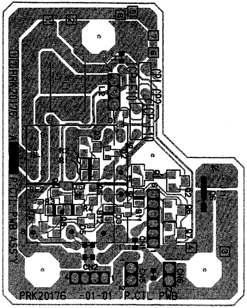
4.4 S/S BOARD SCHEMATIC DIAGRAM (PAL) $\boxed{0}\boxed{5}\boxed{P}$


CN1
IC1 BA6405F
IC2 RA10324F
IC3 BA720F
IC4 7W04F
IC5 RA10255F
IC6 S-8051HN-CD
IC7 BU3773S
IC12 MN50005JVES
IC15 TC4S584F
IC16 TC4S584F
IC17 M38063E6-212FP
IC18 S-8054HN
IC19 TC4021BF
IC20 BA6109U2
IC21
IC23 BA10358F
IC24 S-81252HG
IC25 TC4021BF
IC27 TC4S11F
IC28 M51943BL
IC29 TC4W53F
IC30 TC4W53F
IC401 TC4013BF
IC402 NJM2903M
IC403 TC4S66F
IC404 TC4S81F
IC502 TC4W53F
Q1 DTC124Ea
Q2 DTC124EU
Q3 DTC124EU
Q5 DTC124EU
Q6 2SB798
Q7 2SA1502
Q8 2SB798
Q9 2SA1502
Q11 2SC2412K
Q12 2SC2412
Q14 DTA143ZKT
Q15 DTC124Eu
Q16 DTA143ZKT
Q18 DTA124EU
Q19 DTC124EU
Q20 2SC2412
Q25 FMG1
Q26 FMG1
Q29 DTC144EU
Q30 DTC124EU
Q501 DTC124Ea
D25 MA742
D26 MA742
TP1

● **SAFETY PRECAUTION**

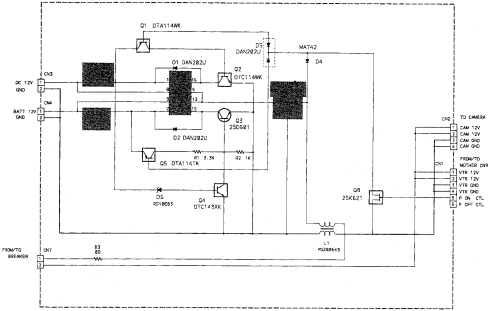
The components identified by the ⚠ symbol and shading are critical for safety.
For continued safety replace safety critical components only with manufactures recommended parts.

4.5 POWER CTL CIRCUIT BOARD (NTSC)

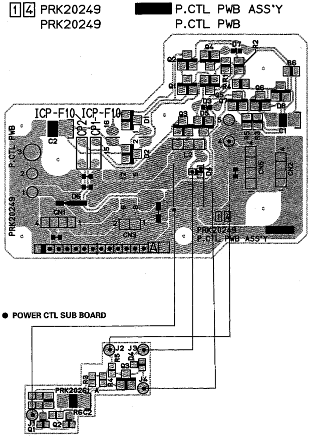

PRK20176 -01-01 P.CTL PWB
PRK20176
P.CTL PWB ASS'Y
CN2
CN6
CN3
CN4
CN7
CN1
L1
Q1
Q2
Q3
Q4
Q5
Q8
D1
D2
D3
D4
D5
D6
R1
R2
R3
R4
B3
CP1
CP2
CP4

4.6 POWER CTL BOARD SCHEMATIC DIAGRAM (NTSC) 1 4 N

- Shaded (⚠) parts are critical for safety.
  Replace only with specified part numbers.


Q1 DTA114WK
D5
DAN202U
MA742
D4
D1 DAN202U
Q2
DTC114WK
CN3
DC 12V
GND
CN4
BATT 12V
GND
1
16
8
5
9
12
2
15
Q3
2SD601
D2 DAN202U
R1 3.3K
R2 1K
Q5 DTA114TK
D6
RD10EB3
Q4
DTC143XK
Q8
2SK621
L1
PGZ00643
FROM/TO
BREAKER
CN7
B3
0Ω
CN2
TO CAMERA
1 CAM 12V
2 CAM 12V
3 CAM GND
4 CAM GND
FROM/TO
MOTHER CN9
CN1
1 VTR 12V
2 VTR 12V
3 VTR GND
4 VTR GND
5 P ON CTL
6 P OFF CTL

4.7 POWER CTL CIRCUIT BOARD (PAL) 1 4 P

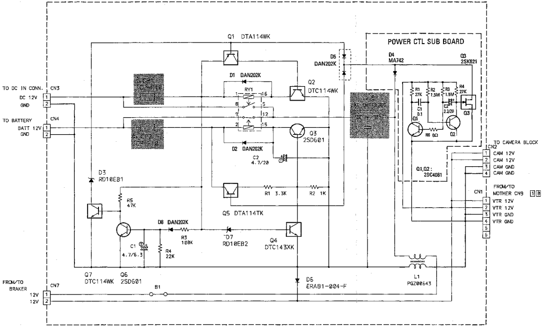

1 4 PRK20249
PRK20249
P.CTL PWB ASS'Y
P.CTL PWB
ICP-F10
ICP-F10
P.CTL PWB
PRK20249
Q1
Q2
Q3
Q4
Q5
Q6
Q7
D1
D2
D3
D4
D5
D6
D7
D8
R1
R2
R3
R4
R5
C1
C2
L1
L2
B6
CN1
CN2
CN3
CN5
1 4
PRK20249
P.CTL PWB ASS'Y
J2
J3
J4
R3
R4
R5
D4
Q1
Q2
Q3
PRK20261 A
R6
C2

● POWER CTL SUB BOARD

4.8 POWER CTL BOARD SCHEAMTIC DIAGRAM (PAL)

● SAFETY PRECAUTION

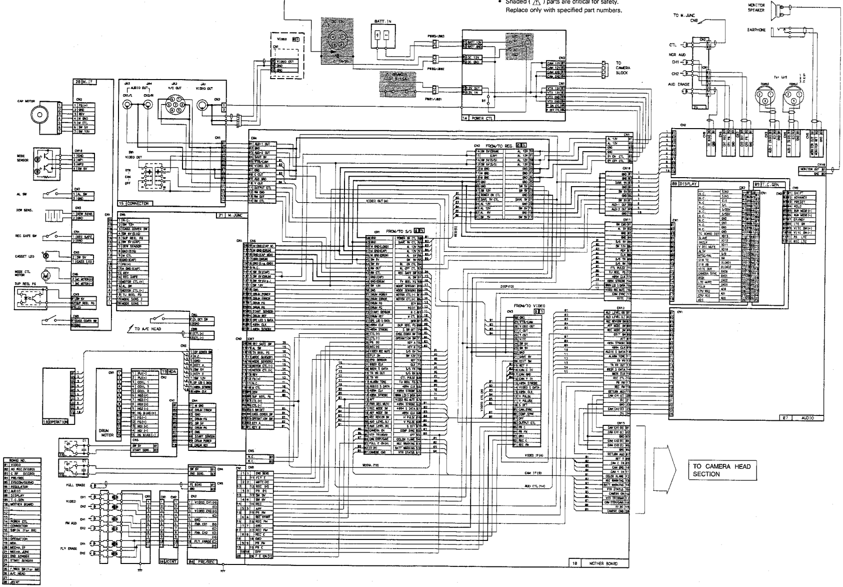
The components identified by the ⚠ symbol and shading are critical for safety.
For continued safety replace safety critical components only with manufactures recommended parts.


Q1 DTA114WK
D5 DAN202K
D1 DAN202K
RY1
Q2 DTC114WK
Q3 2SD601
D2 DAN202K
C2 4.7/20
D3 RD10EB1
R5 47K
R1 3.3K
R2 1K
Q5 DTA114TK
D8 DAN202K
R3 100K
D7 RD10EB2
Q4 DTC143XK
C1 4.7/6.3
R4 22K
Q7 DTC114WK
Q6 2SD601
D6 ERA81-004-F
B1
L1 PGZ00643
TO DC IN CONN.
CN3
DC 12V
GND
TO BATTERY
CN4
BATT 12V
GND
FROM/TO BRAKER
CN7
12V
12V
POWER CTL SUB BOARD
D4 MA742
Q3 2SK621
R1 27K
R2 1.5M
R3 1.5M
R4 27K
C1 0.1
C2 2.2/20
R6 0Ω
Q1
Q2
Q1,Q2 : 2SC4081
TO CAMERA BLOCK
CN2
CAM 12V
CAM 12V
CAM GND
CAM GND
FROM/TO MOTHER CN9 1 0
CN1
VTR 12V
VTR 12V
VTR GND
VTR GND

4.9 OVERALL WIRING (NTSC)

	Part No.	Part Name	Description
⚠ C1	QER41EM-106	E. CAPACITOR	10 25V

- Shaded (⚠) parts are critical for safety. Replace only with specified part numbers.



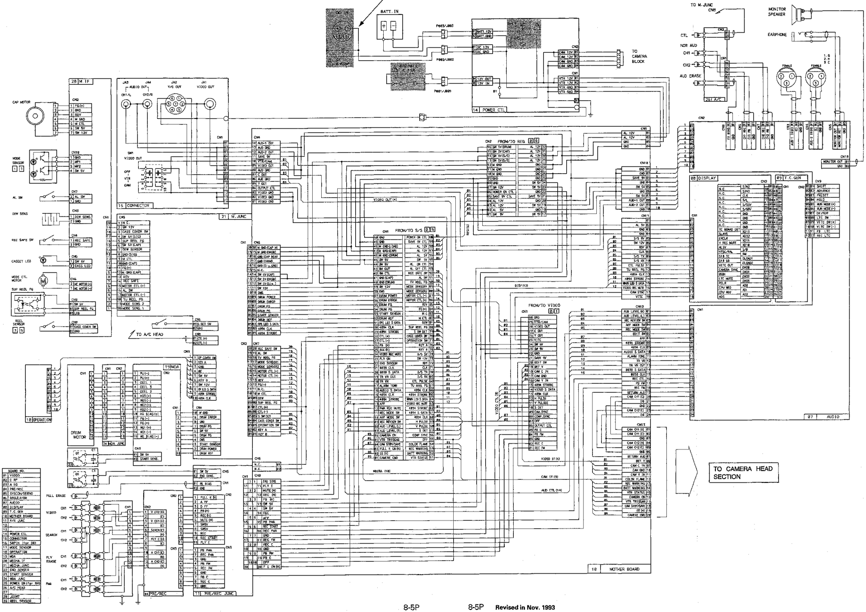
CAP MOTOR
MODE SENSOR
AL SW
DEW SENS.
REC SAFE SW
CASSET LED
MODE CTL MOTOR
SUP REEL FG
20 M. IF
15 CONNECTOR
21 M. JUNC
TO A/C HEAD
18 OPERATION
19 MDA
DRUM MOTOR
FULL ERASE
VIDEO
FM AUD
FLY ERASE
28 JOINT
04 PRE/REC
VIDEO
BATT. IN
DC IN
14 POWER CTL
TO CAMERA BLOCK
TO M. JUNC
MONITOR SPEAKER
EARPHONE
CTL
NOR AUD
CH1
CH2
AUD ERASE
FROM/TO REG.
FROM/TO S/S
FROM/TO VIDEO
08 DISPLAY
09 T.C.GEN
07 AUDIO
10 MOTHER BOARD
TO CAMERA HEAD SECTION

BOARD NO.	
01	VIDEO
02	AD REC (VIDEO)
03	C RF (VIDEO)
04	PRE/REC
05	SYSCON/SERVO
06	REGULATOR
07	AUDIO
08	DISPLAY
09	T.C.GEN
10	MOTHER BOARD
11	
12	
13	
14	POWER CTL
15	CONNECTOR
16	S8PIN (for BR)
17	
18	OPERATION
19	MDA
20	MECHA. IF
21	MECHA. JUNC
22	END SENSER
23	START SENSER
24	
25	TIMER SW (for BR)
26	A/C HEAD
27	
28	JOINT

4.10 OVERALL WIRING (PAL)

	Part No.	Part Name	Description
⚠ C1	QCF11HP-223	CER. CAPACITOR	0.022 50V

- Shaded (⚠) parts are critical for safety. Replace only with specified part numbers.



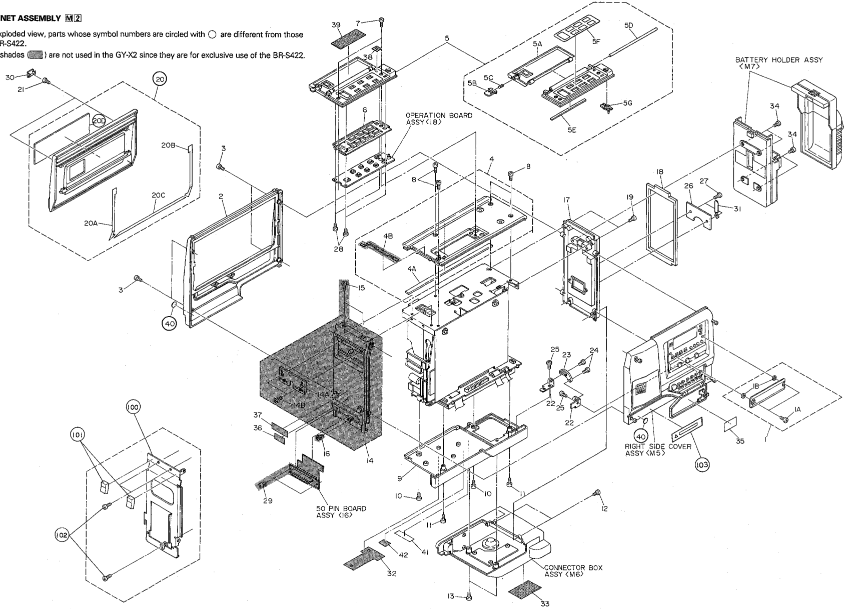
BATT. IN
P003/J003
P002/J002
P001/J001
14 POWER CTL
TO CAMERA BLOCK
TO M. JUNC CN8
MONITOR SPEAKER
EARPHONE
CTL
NOR AUD
CH1
CH2
AUD ERASE
26 A/C
FEMALE
20 M. IF
CAP MOTOR
MODE SENSOR
AL SW
DEW SENS
REC SAFE SW
CASSET LED
MODE CTL MOTOR
SUP REEL FG
REEL SENSOR
JA3 AUDIO OUT
JA4
JA2 Y/C OUT
JA1 VIDEO OUT
SW1 VIDEO OUT
OFF
VTR
CAM
15 CONNECTOR
21 M. JUNC
FROM/TO REG
FROM/TO S/S
FROM/TO VIDEO
VIDEO OUT (4)
DISP (12)
VIDEO IF (6)
CAM IF (9)
AUD CTL (14)
MECHA (10)
08 DISPLAY
09 T.C.GEN
07 AUDIO
TO A/C HEAD
18 OPERATION
19 MDA
DRUM MOTOR
24 MDA JUNC
FULL ERASE
VIDEO
SEARCH
FLY ERASE
FMA
04 PRE/REC
11 PRE/REC JUNC
10 MOTHER BOARD
TO CAMERA HEAD SECTION

BOARD NO.	
01	VIDEO
02	C RF
03	A EQ
04	PRE/REC
05	SYSCON/SERVO
06	REGULATOR
07	AUDIO
08	DISPLAY
09	T.C.GEN
10	MOTHER BOARD
11	P/R JUNC
12	—
13	—
14	POWER CTL
15	CONNECTOR
16	50PIN (for BR)
17	MODE SENSOR
18	OPERATION
19	MDA
20	MECHA. IF
21	MECHA. JUNC
22	END SENSER
23	START SENSER
24	MDA JUNC
25	POWER SW (for BR)
26	A/C HEAD
27	—
28	JOINT
30	REEL SENSOR

SECTION 5
EXPLODED VIEW AND PARTS LIST

5.1 CABINET ASSEMBLY M2

- In the exploded view, parts whose symbol numbers are circled with ○ are different from those of the BR-S422.
- Parts in shades (▨) are not used in the GY-X2 since they are for exclusive use of the BR-S422.



30
21
⑳
20D
20B
20C
20A
3
2
3
㊵
39
7
38
6
28
OPERATION BOARD ASSY <18>
5
5A
5B
5C
5D
5E
5F
5G
4
4A
4B
8
8
8
15
14A
14B
14
37
36
16
29
50 PIN BOARD ASSY <16>
9
10
10
11
11
12
13
41
42
32
33
CONNECTOR BOX ASSY <M6>
25
23
24
22
25
22
17
19
18
26
27
31
BATTERY HOLDER ASSY <M7>
34
34
1B
1A
1
35
㊵
RIGHT SIDE COVER ASSY <M5>
(103)
(100)
(101)
(102)

Note: • Parts with ⚠ mark are critical for safety. Replace them only with parts of the specified part numbers.
- For parts excluded from the following table, refer to the service manual for the BR-S422.

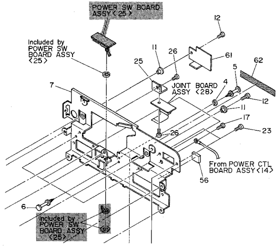
- **Cabinet Assembly list** M2

M2MM□□□□

Symbol No.	Part No.	Part Name	Description
4	PRD30964B-01	Top Cover Ass'y	
20	PRD20465A-06	Cassette Panel Ass'y	U version
	PRD20465E-06	Cassette Panel Ass'y	E version
20D	PRD30986	Window	
30	PRD44259	Cap	
⚠ 40	PU53146-3	Caution Label	U version only
⚠ 41	PU53145-3	Caution Label	U version only
100	PRD30880	Front Panel	Not used for BS-S422
101	PRD30030-76	PAD	Not used for BR-S422
102	SDSP3006ZY	SCREW	M3 x 6 Not used for BR-S422
⚠ 103	SC43658-001	Caution Label	U version only

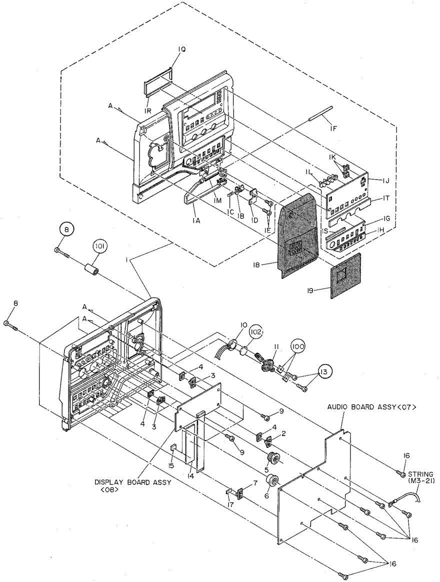
5.2 CHASSIS ASSEMBLY M3

- The POWER SW board is not used in the GY-X2.
  Other parts are the same as those of the BR-S422.


POWER SW BOARD ASSY<25>
12
Included by POWER SW BOARD ASSY <25>
11
26
61
25
62
5
7
JOINT BOARD ASSY <28>
4
12
11
17
26
23
From POWER CTL BOARD ASSY<14>
56
6
Included by POWER SW BOARD ASSY <25>

5.3 R. SIDE COVER ASSEMBLY M5

- In the exploded view, parts whose symbol numbers are circled with ○ are different from those of the BR-S422.
- Parts in shades (▨) are not used in the GY-X2 since they are for exclusive use of the BR-S422.


1Q
1R
A
A
1F
1K
1L
1J
1T
1G
1H
1S
1M
1C
1B
1D
1E
1A
18
19
⑧
(101)
1
8
A
A
10
(102)
11
(100)
⑬
4
3
4
3
9
4
2
9
5
6
7
17
15
14
DISPLAY BOARD ASSY
<08>
AUDIO BOARD ASSY<07>
16
STRING
(M3-21)
16
16

Note: • Parts with ⚠ mark are critical for safety. Replace them only with parts of the specified part numbers.
• For parts excluded from the following table, refer to the service manual for the BR-S422.

- **R Side Cover Assembly list M5**

M5MM☐☐☐☐

Symbol No.	Part No.	Part Name	Description
8	SC43397-009	Screw	
13	YQM3032-49	Screw	
100	SC44537-001	Bracket	
101	PRD30026-46	Collar	
102	PRD30030-90	Pad	

SECTION 6
ELECTRICAL PARTS LIST

- This section lists parts of the S/S board and the POWER CTL board which are different from those of the BR-S422. For other electrical parts, refer to the service manual No. 9277/No. 9288 for the BR-S422.

Note: • Parts with ⚠ mark are critical for safety. Replace them only with parts of the specified part numbers.

6.1 S/S board assembly list 05N
⟨PRK30094A-05⟩ for U version 05N□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	BA6405F	IC	ROHM
IC2	XRA10324F	IC	
IC3	BA728F	IC	ROHM
IC4	TC7W04F	IC	TOSHIBA
IC5	BA10393F	IC	ROHM
IC6	S-8051HN-CD	IC	
IC7	BU5753S	IC	ROHM
IC12	MN50005JVES	IC	MATSUSHITA
IC14	TC4538BF	IC	TOSHIBA
IC15	TC4S584F	IC	TOSHIBA
IC16	TC4S584F	IC	TOSHIBA
IC17	M38063E6-212FP	IC	CPU, program stored
IC18	S-8054HN-CD	IC	
IC19	TC4021BF	IC	TOSHIBA
IC20	M54543ASL	IC	MITSUBISHI
IC21	M6M80011AP	IC	MITSUBISHI
IC23	BA10339F	IC	ROHM
IC24	S-81252HG	IC	
IC25	TC4021BF	IC	TOSHIBA
IC26	TC4W53F	IC	TOSHIBA
IC27	TC4S11F	IC	TOSHIBA
IC28	M51943BML	IC	MITSUBISHI
IC401	TC4S81F	IC	TOSHIBA
IC402	NJM2903M	IC	JRC
IC403	TC4538BF	IC	TOSHIBA
IC404	TC4S81F	IC	TOSHIBA
Q1	DTC124EU	TRANSISTOR	ROHM
Q2	DTC124EU	TRANSISTOR	ROHM
Q3	DTC124EU	TRANSISTOR	ROHM
Q4	DTC124EU	TRANSISTOR	ROHM
Q5	DTC124EU	TRANSISTOR	ROHM
Q6	2SB798	TRANSISTOR	
Q7	2SA1502	TRANSISTOR	
Q8	2SB798	TRANSISTOR	
Q9	2SA1502	TRANSISTOR	
Q11	2SC2412K(QR)	TRANSISTOR	
Q12	2SC2412K(QR)	TRANSISTOR	
Q13	DTA143ZK	TRANSISTOR	ROHM
Q14	DTA143ZK	TRANSISTOR	ROHM
Q15	DTC124EU	TRANSISTOR	ROHM
Q18	DTA124EU	TRANSISTOR	ROHM
Q19	DTC124EU	TRANSISTOR	ROHM
Q20	2SC2412K(QR)	TRANSISTOR	
Q22	DTA124EU	TRANSISTOR	ROHM
Q25	FMG1	TRANSISTOR	ROHM
Q26	FMG1	TRANSISTOR	ROHM
Q29	DTC144EU	TRANSISTOR	ROHM
Q30	DTC124EU	TRANSISTOR	ROHM
Q401	DTC124EU	TRANSISTOR	ROHM
D1	ERA82-004	DIODE	
D2	ERA82-004	DIODE	
D3	RD5.6EB2	ZENER DIODE	
D4	RD6.8EB2	ZENER DIODE	
D5	DAN202U	DIODE	
D6	DAN202U	DIODE	
D7	DA204U	DIODE	
D8	DAN202U	DIODE	
D9	DAN202U	DIODE	
D10	DAN202U	DIODE	
D11	IMN10	DIODE	
D12	RD12EB2	ZENER DIODE	
D13	RD12EB2	ZENER DIODE	
D17	RD3.3EB2	ZENER DIODE	
D18	1SS133	DIODE	
D19	RD12EB2	ZENER DIODE	
D25	MA742	DIODE	MATSUSHITA
D26	MA742	DIODE	MATSUSHITA
D401	DAN202U	DIODE	
D402	DAN202U	DIODE	
D403	DAN202U	DIODE	
D404	DAN202U	DIODE	
R1	NRSA63J-392N	RESISTOR	3.9k 1/16W
R2	NRSA63J-222N	RESISTOR	2.2k 1/16W
R3	QRSA08J-472YN	RESISTOR	4.7k 1/10W
R4	QRSA08J-302YN	RESISTOR	3k 1/10W
R5	QRSA08J-471YN	RESISTOR	470 1/10W
R6	QRSA08J-471YN	RESISTOR	470 1/10W
R7	QRSA08J-272YN	RESISTOR	2.7k 1/10W
R8	QRSA08J-112YN	RESISTOR	1.1k 1/10W
R9	QRSA08J-304YN	RESISTOR	300k 1/10W
R10	QRSA08J-304YN	RESISTOR	300k 1/10W
R11	NRSA63J-104N	RESISTOR	100k 1/16W
R12	NRSA63J-104N	RESISTOR	100k 1/16W
R13	NRSA63J-103N	RESISTOR	10k 1/16W
R14	NRSA63J-104N	RESISTOR	100k 1/16W
R15	NRSA63J-105N	RESISTOR	1M 1/16W
R16	NRSA63J-102N	RESISTOR	1k 1/16W
R17	NRSA63J-474N	RESISTOR	470k 1/16W
R18	NRSA63J-471N	RESISTOR	470 1/16W
R19	NRSA63J-333N	RESISTOR	33k 1/16W
R20	NRSA63J-392N	RESISTOR	3.9k 1/16W
R21	NRSA63J-274N	RESISTOR	270k 1/16W
R22	NRSA63J-563N	RESISTOR	56k 1/16W
R23	NRSA63J-104N	RESISTOR	100k 1/16W
R24	NRSA63J-472N	RESISTOR	4.7k 1/16W
R25	NRSA63J-684N	RESISTOR	680k 1/16W
R26	NRSA63J-823N	RESISTOR	82k 1/16W
R27	NRSA63J-473N	RESISTOR	47k 1/16W
R28	NRSA63J-333N	RESISTOR	33k 1/16W
R29	NRSA63J-333N	RESISTOR	33k 1/16W
R30	NRSA63J-153N	RESISTOR	15k 1/16W
R31	NRSA63J-333N	RESISTOR	33k 1/16W
R32	NRSA63J-153N	RESISTOR	15k 1/16W
R33	NRSA63J-105N	RESISTOR	1M 1/16W
R34	NRSA63J-105N	RESISTOR	1M 1/16W
R35	NRSA63J-274N	RESISTOR	270k 1/16W
R36	NRSA63J-274N	RESISTOR	270k 1/16W
R37	NRSA63J-563N	RESISTOR	56k 1/16W
R38	NRSA63J-823N	RESISTOR	82k 1/16W
R39	NRSA63J-102N	RESISTOR	1k 1/16W
R40	NRSA63J-105N	RESISTOR	1M 1/16W
R41	NRSA63J-102N	RESISTOR	1k 1/16W
R42	NRSA63J-102N	RESISTOR	1k 1/16W
R43	NRSA63J-0R0N	RESISTOR	0 1/16W

Symbol No.	Part No.	Part Name	Description	
R44	NRSA63J-333N	RESISTOR	33k	1/16W
R45	NRSA63J-103N	RESISTOR	10k	1/16W
R46	NRSA63J-103N	RESISTOR	10k	1/16W
R50	NRSA63J-102N	RESISTOR	1k	1/16W
R51	NRSA63J-102N	RESISTOR	1k	1/16W
R52	NRSA63J-104N	RESISTOR	100k	1/16W
R53	NRSA63J-224N	RESISTOR	220k	1/16W
R56	NRSA63J-473	RESISTOR	47k	1/16W
R58	NRSA63J-154	RESISTOR	150k	1/16W
R59	NRSA63J-333	RESISTOR	33k	1/16W
R61	NRSA63J-333N	RESISTOR	33k	1/16W
R62	NRSA63J-103N	RESISTOR	10k	1/16W
R63	NRSA63J-0R0N	RESISTOR	0	1/16W
R64	NRSA63J-102N	RESISTOR	1k	1/16W
R65	NRSA63J-103N	RESISTOR	10k	1/16W
R66	NRSA63J-104N	RESISTOR	100k	1/16W
R67	NRSA63J-104N	RESISTOR	100k	1/16W
R68	NRSA63J-222N	RESISTOR	2.2k	1/16W
R69	NRSA63J-222N	RESISTOR	2.2k	1/16W
R72	NRSA63J-472N	RESISTOR	4.7k	1/16W
R73	NRSA63J-223N	RESISTOR	22k	1/16W
R74	NVP1301-223N	V RESISTOR	22k	
R75	NRSA63J-104N	RESISTOR	100k	1/16W
R76	NRSA63J-563N	RESISTOR	56k	1/16W
R77	NRSA63J-562N	RESISTOR	5.6k	1/16W
R78	NRSA63J-104N	RESISTOR	100k	1/16W
R79	NRSA63J-333N	RESISTOR	33k	1/16W
R80	NRSA63J-333N	RESISTOR	33k	1/16W
R81	NRSA63J-104N	RESISTOR	100k	1/16W
R82	NRSA63J-104N	RESISTOR	100k	1/16W
R83	NRSA63J-222N	RESISTOR	2.2k	1/16W
R84	NRSA63J-103N	RESISTOR	10k	1/16W
R85	NVP1301-474N	RESISTOR	470k	
R86	NRSA63J-472N	RESISTOR	4.7k	1/16W
R87	NRSA63J-124N	RESISTOR	120k	1/16W
R88	NRSA63J-102N	RESISTOR	1k	1/16W
R89	NRSA63J-102N	RESISTOR	1k	1/16W
R90	NRSA63J-102N	RESISTOR	1k	1/16W
R92	NRSA63J-393N	RESISTOR	39k	1/16W
R93	NRSA63J-682N	RESISTOR	6.8k	1/16W
R94	NRSA63J-682N	RESISTOR	6.8k	1/16W
R95	NRSA63J-153N	RESISTOR	15k	1/16W
R96	NRSA63J-153N	RESISTOR	15k	1/16W
R97	NRSA63J-394N	RESISTOR	390k	1/16W
R98	NVP1301-104N	V RESISTOR	100k	
R99	NRSA63J-683N	RESISTOR	68k	1/16W
R100	NRSA63J-274N	RESISTOR	270k	1/16W
R101	NVP1301-104N	V RESISTOR	100k	
R102	NRSA63J-473N	RESISTOR	47k	1/16W
R103	NRSA63J-274N	RESISTOR	270k	1/16W
R104	NRSA63J-473N	RESISTOR	47k	1/16W
R105	NRSA63J-102N	RESISTOR	1k	1/16W
R106	NRSA63J-102N	RESISTOR	1k	1/16W
R107	NRSA63J-102N	RESISTOR	1k	1/16W
R108	NRSA63J-102N	RESISTOR	1k	1/16W
R109	NRSA63J-223N	RESISTOR	22k	1/16W
R110	NVP1301-472N	V RESISTOR	4.7k	
R111	NRSA63J-103N	RESISTOR	10k	1/16W
R112	NRSA63J-102N	RESISTOR	1k	1/16W
R113	NRSA63J-102N	RESISTOR	1k	1/16W
R114	NRSA63J-0R0N	RESISTOR	0	1/16W
R115	NRSA63J-224N	RESISTOR	220k	1/16W
R116	NRSA63J-333N	RESISTOR	33k	1/16W
R117	NRSA63J-102N	RESISTOR	1k	1/16W
R118	NRSA63J-102N	RESISTOR	1k	1/16W
R119	NRSA63J-102N	RESISTOR	1k	1/16W
R120	NRSA63J-0R0N	RESISTOR	0	1/16W
R121	NRSA63J-102N	RESISTOR	1k	1/16W
R122	NRSA63J-102N	RESISTOR	1k	1/16W
R124	NRSA63J-102N	RESISTOR	1k	1/16W
R125	NRSA63J-333N	RESISTOR	33k	1/16W
R126	NRSA63J-105N	RESISTOR	1M	1/16W
R127	NRSA63J-224N	RESISTOR	220k	1/16W
R128	NRSA63J-224N	RESISTOR	220k	1/16W
R129	NRSA63J-333N	RESISTOR	33k	1/16W
R130	NRSA63J-333N	RESISTOR	33k	1/16W
R131	NRSA63J-333N	RESISTOR	33k	1/16W
R132	NRSA63J-333N	RESISTOR	33k	1/16W
R133	NRSA63J-473N	RESISTOR	47k	1/16W
R134	NRSA63J-473N	RESISTOR	47k	1/16W
R135	NRSA63J-822N	RESISTOR	8.2k	1/16W
R136	NRSA63J-473N	RESISTOR	47k	1/16W
R137	NRSA63J-333N	RESISTOR	33k	1/16W
R138	NRSA63J-333N	RESISTOR	33k	1/16W
R139	NRSA63J-333N	RESISTOR	33k	1/16W
R140	NRSA63J-333N	RESISTOR	33k	1/16W
R141	NRSA63J-333N	RESISTOR	33k	1/16W
R142	NRSA63J-333N	RESISTOR	33k	1/16W
R143	NRSA63J-333N	RESISTOR	33k	1/16W
R144	NRSA63J-333N	RESISTOR	33k	1/16W
R145	NRSA63J-333N	RESISTOR	33k	1/16W
R146	NRSA63J-333N	RESISTOR	33k	1/16W
R147	NRSA63J-333N	RESISTOR	33k	1/16W
R148	NRSA63J-333N	RESISTOR	33k	1/16W
R149	NRSA63J-562N	RESISTOR	5.6k	1/16W
R150	NRSA63J-682N	RESISTOR	6.8k	1/16W
R151	NRSA63J-682N	RESISTOR	6.8k	1/16W
R152	NRSA63J-682N	RESISTOR	6.8k	1/16W
R153	NRSA63J-562N	RESISTOR	5.6k	1/16W
R154	NRSA63J-104N	RESISTOR	100k	1/16W
R155	NRSA63J-104N	RESISTOR	100k	1/16W
R156	NRSA63J-104N	RESISTOR	100k	1/16W
R157	NRSA63J-102N	RESISTOR	1k	1/16W
R158	NRSA63J-102N	RESISTOR	1k	1/16W
R159	NRSA63J-102N	RESISTOR	1k	1/16W
R160	NRSA63J-102N	RESISTOR	1k	1/16W
R161	NRSA63J-103N	RESISTOR	10k	1/16W
R162	NRSA63J-104N	RESISTOR	100k	1/16W
R163	NRSA63J-102N	RESISTOR	1k	1/16W
R164	NRSA63J-102N	RESISTOR	1k	1/16W
R165	NRSA63J-102N	RESISTOR	1k	1/16W
R166	NRSA63J-102N	RESISTOR	1k	1/16W
R167	NRSA63J-102N	RESISTOR	1k	1/16W
R168	NRSA63J-102N	RESISTOR	1k	1/16W
R169	NRSA63J-102N	RESISTOR	1k	1/16W
R170	NRSA63J-102N	RESISTOR	1k	1/16W
R171	NRSA63J-102N	RESISTOR	1k	1/16W
R172	NRSA63J-473N	RESISTOR	47k	1/16W

Symbol No.	Part No.	Part Name	Description	
R173	NRSA63J-102N	RESISTOR	1k	1/16W
R174	NRSA63J-102N	RESISTOR	1k	1/16W
R175	NRSA63J-102N	RESISTOR	1k	1/16W
R176	NRSA63J-102N	RESISTOR	1k	1/16W
R177	NRSA63J-102N	RESISTOR	1k	1/16W
R178	NRSA63J-102N	RESISTOR	1k	1/16W
R179	NRSA63J-102N	RESISTOR	1k	1/16W
R180	NRSA63J-102N	RESISTOR	1k	1/16W
R181	NRSA63J-102N	RESISTOR	1k	1/16W
R182	NRSA63J-102N	RESISTOR	1k	1/16W
R183	NRSA63J-102N	RESISTOR	1k	1/16W
R184	NRSA63J-102N	RESISTOR	1k	1/16W
R185	NRSA63J-102N	RESISTOR	1k	1/16W
R186	NRSA63J-102N	RESISTOR	1k	1/16W
R187	NRSA63J-102N	RESISTOR	1k	1/16W
R188	NRSA63J-102N	RESISTOR	1k	1/16W
R189	NRSA63J-102N	RESISTOR	1k	1/16W
R190	NRSA63J-684N	RESISTOR	680k	1/16W
R192	NRSA63J-102N	RESISTOR	1k	1/16W
R193	NRSA63J-102N	RESISTOR	1k	1/16W
R199	NRSA63J-473N	RESISTOR	47k	1/16W
R207	NVP1301-474N	RESISTOR	470k	
R208	NRSA63J-333N	RESISTOR	33k	1/16W
R209	NRSA63J-333N	RESISTOR	33k	1/16W
R210	NRSA63J-154N	RESISTOR	150k	1/16W
R211	NRSA63J-154N	RESISTOR	150k	1/16W
R212	NRSA63J-102N	RESISTOR	1k	1/16W
R213	NRSA63J-102N	RESISTOR	1k	1/16W
R214	NRSA63J-104N	RESISTOR	100k	1/16W
R215	NRSA63J-104N	RESISTOR	100k	1/16W
R218	NRSA63J-0R0N	RESISTOR	0	1/16W
R219	NRSA63J-0R0N	RESISTOR	0	1/16W
R221	NRSA63J-473N	RESISTOR	47k	1/16W
R222	NRSA63J-103N	RESISTOR	10k	1/16W
R223	NRSA63J-102N	RESISTOR	1k	1/16W
R224	NRSA63J-104N	RESISTOR	100k	1/16W
R401	NVP1301-154N	V RESISTOR	150k	
R402	NRSA63J-184N	RESISTOR	180k	1/16W
R403	NRSA63J-392N	RESISTOR	3.9k	1/16W
R404	NRSA63J-562N	RESISTOR	5.6k	1/16W
R405	NRSA63J-103N	RESISTOR	10k	1/16W
R406	NRSA63J-152N	RESISTOR	1.5k	1/16W
R407	NRSA63J-105N	RESISTOR	1M	1/16W
R408	NRSA63J-224N	RESISTOR	220k	1/16W
R409	NRSA63J-472N	RESISTOR	4.7k	1/16W
R410	NRSA63J-184N	RESISTOR	180k	1/16W
C1	QERF0JM-107	E CAPACITOR	100	6.3V
C2	NCB31EK-103A	CAPACITOR	0.01	25V
C3	NCB31EK-103A	CAPACITOR	0.01	25V
C4	NCS31HJ-121A	CAPACITOR	120p	50V
C5	NCS31HJ-121A	CAPACITOR	120p	50V
C6	PGZ01800-687	E CAPACITOR		
C7	QCYA1HK-222	CAPACITOR	0.0022	50V
C8	QER41CM-107	E CAPACITOR	100	16V
C9	QCYA1HK-222	CAPACITOR	0.0022	50V
C10	QER41CM-107	E CAPACITOR	100	16V
C11	QCYA1HK-332	CAPACITOR	0.0033	50V
C12	QERF1HM-105	E CAPACITOR	1	50V

Symbol No.	Part No.	Part Name	Description	
C13	NCB31EK-103A	CAPACITOR	0.01	25V
C14	QERF1CM-106	E CAPACITOR	10	16V
C15	NCS31HJ-471A	CAPACITOR	470p	50V
C16	QERF1CM-106	E CAPACITOR	10	16V
C17	QERF1CM-106	E CAPACITOR	10	16V
C18	NCB31HK-102A	CAPACITOR	0.001	50V
C19	QERF1CM-476	E CAPACITOR	47	16V
C20	QERF1HM-105	E CAPACITOR	1	50V
C21	NCB31HK-222A	CAPACITOR	0.0022	50V
C22	NCB31HK-102A	CAPACITOR	0.001	50V
C23	QERF0JM-226	E CAPACITOR	22	6.3V
C24	QEPA1HM-224	NP E CAPACITOR	0.22	50V
C25	NCR31CK-153A	CAPACITOR	0.015	16V
C26	QEPA1HM-474	NP E CAPACITOR	0.47	50V
C27	NCB31HK-332A	CAPACITOR	0.0033	50V
C28	QEPA1HM-474	NP E CAPACITOR	0.47	50V
C29	QEPA1CM-106	NP E CAPACITOR	10	16V
C30	QERF0JM-107	E CAPACITOR	100	6.3V
C31	NCB31HK-102A	CAPACITOR	0.001	50V
C32	NCB31HK-102A	CAPACITOR	0.001	50V
C33	QFN41HJ-823	MY CAPACITOR	0.082	50V
C34	NCB31HK-102A	CAPACITOR	0.001	50V
C35	NCB31HK-102A	CAPACITOR	0.001	50V
C36	NCB31EK-103A	CAPACITOR	0.01	25V
C37	NCB31HK-332A	CAPACITOR	0.0033	50V
C38	QCYA1EK-104	CAPACITOR	0.1	25V
C40	QCYA1HK-152	CAPACITOR	0.0015	50V
C41	QCSA1HJ-330	CAPACITOR	33p	50V
C42	QCSA1HJ-330	CAPACITOR	33p	50V
C43	QCSA1HJ-561	CAPACITOR	560p	50V
C44	QCYA1HK-102	CAPACITOR	0.001	50V
C45	QCYA1EK-104	CAPACITOR	0.1	25V
C46	QCSA1HJ-330	CAPACITOR	33p	50V
C47	QCSA1HJ-330	CAPACITOR	33p	50V
C48	QCYA1EK-104	CAPACITOR	0.1	25V
C49	QCYA1EK-104	CAPACITOR	0.1	25V
C52	QFN41HJ-333	MY CAPACITOR	0.033	50V
C55	QFN41HJ-333	MY CAPACITOR	0.033	50V
C58	QCYA1EK-104	CAPACITOR	0.1	25V
C61	QCYA1EK-104	CAPACITOR	0.1	25V
C62	QCSA1HJ-100	CAPACITOR	10p	50V
C63	QCSA1HJ-100	CAPACITOR	10p	50V
C64	QERF1HM-105	E CAPACITOR	1	50V
C65	QERF1EM-475	E CAPACITOR	4.7	25V
C66	QCYA1EK-104	CAPACITOR	0.1	25V
C67	QCYA1EK-104	CAPACITOR	0.1	25V
C68	QCYA1EK-104	CAPACITOR	0.1	25V
C69	NCB31CK-333A	CAPACITOR	0.033	16V
C70	QEA40HZ-224	E CAPACITOR (DOUBLE)	0.22F	5.5V
C71	NEE21EM-105RY	T CAPACITOR	1	25V
C72	NEE21EM-105RY	T CAPACITOR	1	25V
C73	QERF0JM-107	E CAPACITOR	100	6.3V
C74	QCYA1EK-104	CAPACITOR	0.1	25V
C75	NCB31CK-223A	CAPACITOR	0.022	16V
C76	NCB31CK-223A	CAPACITOR	0.022	16V
C77	QCF11HP-223	CAPACITOR	0.022	50V
C401	NFV31CJ-104AY	FILM CAPACITOR	0.1	16V
C402	NCB31CK-333A	CAPACITOR	0.033	16V
C403	NCB31EK-183A	CAPACITOR	0.018	25V

Symbol No.	Part No.	Part Name	Description
C404	NCB31EK-103A	CAPACITOR	0.01 25V
L1	PU56181-151	COIL	150μH
⚠ CF1	PU55407	RESONATOR	
⚠ X1	PGZ00857	CRYSTAL RESONATOR	
⚠ X2	PGZ01566	CRYSTAL RESONATOR	
K1	PGZ00354	FERRAITE BEADS	
T1	YU41190	TRANS	
T2	YU41190	TRANS	
BKT1	PRD43842	BRACKET (PWB)	2 PCS
SCW1	SDST2606Z	SCREW	2 PCS
SLD1	PRS40025	SHIELD CASE	
SLD2	PU61042	SHIELD COVER	
SLD3	PU61043	SHIELD PLATE	
TP1	PGZ01015	TEST PIN	
TP2	PGZ01015	TEST PIN	
TP3	PGZ01015	TEST PIN	
TP4	PGZ01015	TEST PIN	
TP5	PGZ01015	TEST PIN	
TP6	PGZ01015	TEST PIN	
TP7	PU56008	TEST PIN	
TP8	PGZ01015	TEST PIN	
TP9	PGZ01015	TEST PIN	
TP10	PGZ01015	TEST PIN	
TP11	PGZ01015	TEST PIN	
TP12	PGZ01015	TEST PIN	
CN1	PGZ01519-100	CONNECTOR	
		S/S SUB BOARD 051 〈PRK20220A〉	
Q32	FMS2	TRANSISTOR	ROHM
Q33	2SC4097(Q,R)	TRANSISTOR	
D28	DA204K	DIODE	MATSUSHITA
R225	QRSA63J-103N	RESISTOR	100k 1/16W
		S/S SUB2 BOARD 052 〈PRK20229A〉	
IC501	UPD4013BG	I.C. (M)	NEC
IC502	TC4W53F	I.C. (M)	TOSHIBA
Q501	DTC124EU	TRANSISTOR	ROHM
R501	NRSA63J-103N	RESISTOR	10k 1/16W
R502	NRSA63J-105N	RESISTOR	1M 1/16W
R503	NRSA63J-333N	RESISTOR	33k 1/16W
C501	QEF81AM-475	E CAPACITOR	4.7 10V
C502	QEF81AM-475	E CAPACITOR	4.7 10V

6.2 POWER CTL board assembly list 14N
〈PRK20176A-01〉 for U version 14N☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	DTA114WK	TRANSISTOR	
Q2	DTC114WK	TRANSISTOR	
Q3	2SD601A	TRANSISTOR	
Q4	DTC143XK	TRANSISTOR	
Q5	DTA114TK	TRANSISTOR	
Q8	2SK621	FET	
D1	DAN202U	DIODE	
D2	DAN202U	DIODE	
D4	MA742	DIODE	
D5	DAN202U	DIODE	
D6	RD10EB3	DIODE	
R1	QRSA08J-332YN	RESISTOR	3.3k 1/10W
R2	QRSA08J-102YN	RESISTOR	1k 1/10W
B11	QRSA08J-0R0Y	RESISTOR	0 1/10W
B12	QRSA08J-0R0Y	RESISTOR	0 1/10W
L1	PGZ00643	COIL	
⚠ L2	EXC-EMT102BC	NOISE FILTER	
⚠ RY1	PGZ01743	RELAY	
CL1	PU55379	MINI CLAMP	
CN1	PU58844-6	CONNECTOR	
CN2	PU58844-4	CONNECTOR	
⚠ CP1	ICP-F10	CIRCUIT PROTECTOR	
⚠ CP2	ICP-F10	CIRCUIT PROTECTOR	

6.3 S/S [PAL] board assembly list 0 5 P
〈PRK30119A–01〉 for E version 0 5 P ☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description	
IC1	BA6405F	IC	ROHM	
IC2	XRA10324F	IC	EXAR	
IC3	BA728F	IC	ROHM	
IC4	TC7W04F	IC	TOSHIBA	
IC5	BA10393F	IC	ROHM	
IC6	S–8051HN–CD–X	IC	SEIKO	
IC7	BU3779S	IC	ROHM	
IC12	MN50005JVES	IC	MATSUSHITA	
IC15	TC4S584F	IC	TOSHIBA	
IC16	TC4S584F	IC	TOSHIBA	
IC17	M38063E6–358FP	IC	CPU, program stored	
IC18	S–8054HN–CB–X	IC	SEIKO	
IC19	TC4021BF	IC	TOSHIBA	
IC20	BA6109U2	IC	ROHM	
IC21	M6M80011AP	IC	MITSUBISHI	
IC23	BA10339F	IC	ROHM	
IC24	S–81252HG	IC	SEIKO	
IC25	TC4021BF	IC	TOSHIBA	
IC27	TC4S11F	IC	TOSHIBA	
IC28	M51943BML	IC	MITSUBISHI	
IC29	TC4W53F	IC	TOSHIBA	
IC30	TC4W53F	IC	TOSHIBA	
IC402	NJM2903M	IC	JRC	
IC403	TC4538BF	IC	TOSHIBA	
IC404	TC4S81F	IC	TOSHIBA	
IC501	TC4013BF	IC	TOSHIBA	
IC502	TC4W53F	IC	TOSHIBA	
Q1	DTC124EU	TRANSISTOR	ROHM	
Q2	DTC124EU	TRANSISTOR	ROHM	
Q3	DTC124EU	TRANSISTOR	ROHM	
Q5	DTC124EU	TRANSISTOR	ROHM	
Q6	2SB798	TRANSISTOR	NEC	
Q7	2SA1502–XE	TRANSISTOR	SANYO	
Q8	2SB798	TRANSISTOR	NEC	
Q9	2SA1502–XE	TRANSISTOR	SANYO	
Q11	2SC2412K(QR)	TRANSISTOR	ROHM	
Q12	2SC2412K(QR)	TRANSISTOR	ROHM	
Q13	DTA143ZK	TRANSISTOR	ROHM	
Q14	DTA143ZK	TRANSISTOR	ROHM	
Q15	DTC124EU	TRANSISTOR	ROHM	
Q18	DTA124EU	TRANSISTOR	ROHM	
Q19	DTC124EU	TRANSISTOR	ROHM	
Q20	2SC2412K(QR)	TRANSISTOR	ROHM	
Q25	FMG1	TRANSISTOR		
Q26	FMG1	TRANSISTOR		
Q29	DTC144EU	TRANSISTOR	ROHM	
Q30	DTC124EU	TRANSISTOR	ROHM	
Q501	DTC124EU	TRANSISTOR	ROHM	
D1	ERA82–004	DIODE	FUJIELECTRIC	
D2	ERA82–004	DIODE	FUJIELECTRIC	
D3	RD5.6ESB2	ZENER DIODE	NEC	
D4	RD6.8ESB2	ZENER DIODE	NEC	
D5	DAN202U	DIODE	ROHM	
D6	DAN202U	DIODE	ROHM	
D7	DA204U	DIODE	ROHM	
D8	DAN202U	DIODE	ROHM	
D12	RD12EB2	ZENER DIODE	NEC	
D13	RD12EB2	ZENER DIODE	NEC	
D17	RD3.3EB2	ZENER DIODE	NEC	
D18	1SS133	DIODE	ROHM	
D19	RD12EB2	ZENER DIODE	NEC	
D25	MA742	DIODE	MATSUSHITA	
D26	MA742	DIODE	MATSUSHITA	
D28	RD9.1ESB2	ZENER DIODE	NEC	
D30	1SS99	DIODE	NEC	
D401	DAN202U	DIODE	ROHM	
D402	DAN202U	DIODE	ROHM	
R1	NRSA63J–392N	RESISTOR	3.9K	1/16W
R2	NRSA63J–222N	RESISTOR	2.2K	1/16W
R3	QRSA08J–472YN	RESISTOR	4.7K	1/10W
R4	QRSA08J–302YN	RESISTOR	3K	1/10W
R5	QRSA08J–471YN	RESISTOR	470	1/10W
R6	QRSA08J–471YN	RESISTOR	470	1/10W
R7	QRSA08J–272YN	RESISTOR	2.7K	1/10W
R8	QRSA08J–112YN	RESISTOR	1.1K	1/10W
R9	QRSA08J–304YN	RESISTOR	300K	1/10W
R10	QRSA08J–304YN	RESISTOR	300K	1/10W
R11	NRSA63J–104N	RESISTOR	100K	1/16W
R12	NRSA63J–104N	RESISTOR	100K	1/16W
R13	NRSA63J–103N	RESISTOR	10K	1/16W
R14	NRSA63J–104N	RESISTOR	100K	1/16W
R15	NRSA63J–105N	RESISTOR	1M	1/16W
R16	NRSA63J–102N	RESISTOR	1K	1/16W
R17	NRSA63J–474N	RESISTOR	470K	1/16W
R18	NRSA63J–471N	RESISTOR	470	1/16W
R19	NRSA63J–333N	RESISTOR	33K	1/16W
R20	NRSA63J–392N	RESISTOR	3.9K	1/16W
R21	NRSA63J–274N	RESISTOR	270K	1/16W
R22	NRSA63J–823N	RESISTOR	82K	1/16W
R23	NRSA63J–104N	RESISTOR	100K	1/16W
R24	NRSA63J–472N	RESISTOR	4.7K	1/16W
R25	NRSA63J–684N	RESISTOR	680K	1/16W
R26	NRSA63J–223N	RESISTOR	22K	1/16W
R27	NRSA63J–473N	RESISTOR	47K	1/16W
R28	NRSA63J–333N	RESISTOR	33K	1/16W
R29	NRSA63J–333N	RESISTOR	33K	1/16W
R30	NRSA63J–153N	RESISTOR	15K	1/16W
R31	NRSA63J–333N	RESISTOR	33K	1/16W
R32	NRSA63J–153N	RESISTOR	15K	1/16W
R33	NRSA63J–105N	RESISTOR	1M	1/16W
R35	NRSA63J–274N	RESISTOR	270K	1/16W
R36	NRSA63J–274N	RESISTOR	270K	1/16W
R39	NRSA63J–102N	RESISTOR	1K	1/16W
R40	NRSA63J–105N	RESISTOR	1M	1/16W
R41	NRSA63J–102N	RESISTOR	1K	1/16W
R42	NRSA63J–102N	RESISTOR	1K	1/16W
R43	NRSA63J–0R0N	RESISTOR	0	1/16W
R44	NRSA63J–333N	RESISTOR	33K	1/16W
R45	NRSA63J–103N	RESISTOR	10K	1/16W
R46	NRSA63J–103N	RESISTOR	10K	1/16W

Symbol No.	Part No.	Part Name	Description	
R50	NRSA63J-102N	RESISTOR	1K	1/16W
R51	NRSA63J-102N	RESISTOR	1K	1/16W
R52	NRSA63J-104N	RESISTOR	100K	1/16W
R53	NRSA63J-224N	RESISTOR	220K	1/16W
R56	NRSA63J-473N	RESISTOR	47K	1/16W
R58	NRSA63J-154N	RESISTOR	150K	1/16W
R59	NRSA63J-333N	RESISTOR	33K	1/16W
R64	NRSA63J-102N	RESISTOR	1K	1/16W
R65	NRSA63J-103N	RESISTOR	10K	1/16W
R66	NRSA63J-274N	RESISTOR	270K	1/16W
R67	NRSA63J-104N	RESISTOR	100K	1/16W
R68	NRSA63J-222N	RESISTOR	2.2K	1/16W
R69	NRSA63J-222N	RESISTOR	2.2K	1/16W
R72	NRSA63J-472N	RESISTOR	4.7K	1/16W
R73	NRSA63J-223N	RESISTOR	22K	1/16W
R74	PU59237-223	V RESISTOR	22K	
R75	NRSA63J-104N	RESISTOR	100K	1/16W
R76	NRSA63J-563N	RESISTOR	56K	1/16W
R77	NRSA63J-562N	RESISTOR	5.6K	1/16W
R78	NRSA63J-104N	RESISTOR	100K	1/16W
R79	NRSA63J-333N	RESISTOR	33K	1/16W
R80	NRSA63J-333N	RESISTOR	33K	1/16W
R81	NRSA63J-104N	RESISTOR	100K	1/16W
R82	NRSA63J-104N	RESISTOR	100K	1/16W
R83	NRSA63J-222N	RESISTOR	2.2K	1/16W
R84	NRSA63J-103N	RESISTOR	10K	1/16W
R85	PU59237-474	V RESISTOR	470K	
R86	NRSA63J-472N	RESISTOR	4.7K	1/16W
R87	NRSA63J-124N	RESISTOR	120K	1/16W
R88	NRSA63J-102N	RESISTOR	1K	1/16W
R89	NRSA63J-102N	RESISTOR	1K	1/16W
R90	NRSA63J-102N	RESISTOR	1K	1/16W
R92	NRSA63J-393N	RESISTOR	39K	1/16W
R93	NRSA63J-682N	RESISTOR	6.8K	1/16W
R94	NRSA63J-682N	RESISTOR	6.8K	1/16W
R95	NRSA63J-153N	RESISTOR	15K	1/16W
R96	NRSA63J-153N	RESISTOR	15K	1/16W
R103	NRSA63J-274N	RESISTOR	270K	1/16W
R104	NRSA63J-473N	RESISTOR	47K	1/16W
R105	NRSA63J-102N	RESISTOR	1K	1/16W
R106	NRSA63J-102N	RESISTOR	1K	1/16W
R107	NRSA63J-102N	RESISTOR	1K	1/16W
R108	NRSA63J-102N	RESISTOR	1K	1/16W
R109	NRSA63J-223N	RESISTOR	22K	1/16W
R110	PU59237-472	V RESISTOR	4.7K	
R111	NRSA63J-822N	RESISTOR	8.2K	1/16W
R112	NRSA63J-102N	RESISTOR	1K	1/16W
R113	NRSA63J-102N	RESISTOR	1K	1/16W
R114	NRSA63J-0R0N	RESISTOR	0	1/16W
R115	NRSA63J-224N	RESISTOR	220K	1/16W
R116	NRSA63J-333N	RESISTOR	33K	1/16W
R117	NRSA63J-102N	RESISTOR	1K	1/16W
R118	NRSA63J-102N	RESISTOR	1K	1/16W
R119	NRSA63J-102N	RESISTOR	1K	1/16W
R120	NRSA63J-0R0N	RESISTOR	0	1/16W
R121	NRSA63J-102N	RESISTOR	1K	1/16W
R122	NRSA63J-102N	RESISTOR	1K	1/16W

Symbol No.	Part No.	Part Name	Description	
R124	NRSA63J-102N	RESISTOR	1K	1/16W
R125	NRSA63J-333N	RESISTOR	33K	1/16W
R126	NRSA63J-105N	RESISTOR	1M	1/16W
R127	NRSA63J-224N	RESISTOR	220K	1/16W
R128	NRSA63J-224N	RESISTOR	220K	1/16W
R129	NRSA63J-333N	RESISTOR	33K	1/16W
R130	NRSA63J-333N	RESISTOR	33K	1/16W
R131	NRSA63J-333N	RESISTOR	33K	1/16W
R133	NRSA63J-473N	RESISTOR	47K	1/16W
R134	NRSA63J-473N	RESISTOR	47K	1/16W
R135	NRSA63J-562N	RESISTOR	5.6K	1/16W
R136	NRSA63J-473N	RESISTOR	47K	1/16W
R137	NRSA63J-333N	RESISTOR	33K	1/16W
R138	NRSA63J-333N	RESISTOR	33K	1/16W
R139	NRSA63J-333N	RESISTOR	33K	1/16W
R140	NRSA63J-333N	RESISTOR	33K	1/16W
R141	NRSA63J-333N	RESISTOR	33K	1/16W
R142	NRSA63J-333N	RESISTOR	33K	1/16W
R143	NRSA63J-333N	RESISTOR	33K	1/16W
R144	NRSA63J-333N	RESISTOR	33K	1/16W
R145	NRSA63J-333N	RESISTOR	33K	1/16W
R146	NRSA63J-333N	RESISTOR	33K	1/16W
R147	NRSA63J-333N	RESISTOR	33K	1/16W
R148	NRSA63J-333N	RESISTOR	33K	1/16W
R149	NRSA63J-562N	RESISTOR	5.6K	1/16W
R150	NRSA63J-682N	RESISTOR	6.8K	1/16W
R151	NRSA63J-682N	RESISTOR	6.8K	1/16W
R152	NRSA63J-682N	RESISTOR	6.8K	1/16W
R153	NRSA63J-562N	RESISTOR	5.6K	1/16W
R154	NRSA63J-104N	RESISTOR	100K	1/16W
R155	NRSA63J-104N	RESISTOR	100K	1/16W
R156	NRSA63J-104N	RESISTOR	100K	1/16W
R157	NRSA63J-102N	RESISTOR	1K	1/16W
R158	NRSA63J-102N	RESISTOR	1K	1/16W
R159	NRSA63J-102N	RESISTOR	1K	1/16W
R160	NRSA63J-102N	RESISTOR	1K	1/16W
R161	NRSA63J-103N	RESISTOR	10K	1/16W
R162	NRSA63J-104N	RESISTOR	100K	1/16W
R163	NRSA63J-102N	RESISTOR	1K	1/16W
R164	NRSA63J-102N	RESISTOR	1K	1/16W
R165	NRSA63J-102N	RESISTOR	1K	1/16W
R166	NRSA63J-102N	RESISTOR	1K	1/16W
R167	NRSA63J-102N	RESISTOR	1K	1/16W
R168	NRSA63J-102N	RESISTOR	1K	1/16W
R169	NRSA63J-102N	RESISTOR	1K	1/16W
R170	NRSA63J-102N	RESISTOR	1K	1/16W
R171	NRSA63J-102N	RESISTOR	1K	1/16W
R172	NRSA63J-473N	RESISTOR	47K	1/16W
R173	NRSA63J-102N	RESISTOR	1K	1/16W
R174	NRSA63J-102N	RESISTOR	1K	1/16W
R175	NRSA63J-102N	RESISTOR	1K	1/16W
R176	NRSA63J-102N	RESISTOR	1K	1/16W
R177	NRSA63J-102N	RESISTOR	1K	1/16W
R178	NRSA63J-102N	RESISTOR	1K	1/16W
R179	NRSA63J-102N	RESISTOR	1K	1/16W
R180	NRSA63J-102N	RESISTOR	1K	1/16W
R181	NRSA63J-102N	RESISTOR	1K	1/16W
R182	NRSA63J-102N	RESISTOR	1K	1/16W
R183	NRSA63J-102N	RESISTOR	1K	1/16W

Symbol No.	Part No.	Part Name	Description	
R184	NRSA63J-102N	RESISTOR	1K	1/16W
R185	NRSA63J-102N	RESISTOR	1K	1/16W
R186	NRSA63J-102N	RESISTOR	1K	1/16W
R187	NRSA63J-102N	RESISTOR	1K	1/16W
R188	NRSA63J-102N	RESISTOR	1K	1/16W
R189	NRSA63J-102N	RESISTOR	1K	1/16W
R190	NRSA63J-103N	RESISTOR	10K	1/16W
R192	NRSA63J-102N	RESISTOR	1K	1/16W
R193	NRSA63J-102N	RESISTOR	1K	1/16W
R199	NRSA63J-473N	RESISTOR	47K	1/16W
R208	NRSA63J-333N	RESISTOR	33K	1/16W
R209	NRSA63J-333N	RESISTOR	33K	1/16W
R210	NRSA63J-154N	RESISTOR	150K	1/16W
R211	NRSA63J-154N	RESISTOR	150K	1/16W
R212	NRSA63J-102N	RESISTOR	1K	1/16W
R213	NRSA63J-102N	RESISTOR	1K	1/16W
R214	NRSA63J-104N	RESISTOR	100K	1/16W
R215	NRSA63J-104N	RESISTOR	100K	1/16W
R220	NRSA63J-0R0N	RESISTOR	0	1/16W
R221	NRSA63J-473N	RESISTOR	47K	1/16W
R222	NRSA63J-103N	RESISTOR	10K	1/16W
R223	NRSA63J-102N	RESISTOR	1K	1/16W
R224	NRSA63J-104N	RESISTOR	100K	1/16W
R226	NRSA63J-0R0N	RESISTOR	0	1/16W
R228	NRSA63J-104N	RESISTOR	100K	1/16W
R230	NRSA63J-103N	RESISTOR	10K	1/16W
R401	PU59237-334	V RESISTOR	330K	
R402	NRSA63J-184N	RESISTOR	180K	1/16W
R403	NRSA63J-392N	RESISTOR	3.9K	1/16W
R404	NRSA63J-562N	RESISTOR	5.6K	1/16W
R405	NRSA63J-103N	RESISTOR	10K	1/16W
R406	NRSA63J-152N	RESISTOR	1.5K	1/16W
R407	NRSA63J-105N	RESISTOR	1M	1/16W
R501	NRSA63J-103N	RESISTOR	10K	1/16W
R502	NRSA63J-105N	RESISTOR	1M	1/16W
R503	NRSA63J-333N	RESISTOR	33K	1/16W
C1	QERF0JM-107	E CAPACITOR	100	6.3V
C2	NCB31EK-103A	CAPACITOR	0.01	25V
C3	NCB31EK-103A	CAPACITOR	0.01	25V
C4	NCS31HJ-121A	CAPACITOR	120P	50V
C5	NCS31HJ-121A	CAPACITOR	120P	50V
C6	PGZ01800-687	E CAPACITOR		
C7	QCYA1HK-222	CAPACITOR	0.0022	50V
C8	QER41CM-107	E CAPACITOR	100	16V
C9	QCYA1HK-222	CAPACITOR	0.0022	50V
C10	QER41CM-107	E CAPACITOR	100	16V
C11	QCYA1HK-332	CAPACITOR	0.0033	50V
C12	QERF1HM-105	E CAPACITOR	1	50V
C13	NCB31EK-103A	CAPACITOR	0.01	25V
C14	QERF1CM-106	E CAPACITOR	10	16V
C15	NCS31HJ-471A	CAPACITOR	470P	50V
C16	QERF1CM-106	E CAPACITOR	10	16V
C17	QERF1CM-106	E CAPACITOR	10	16V
C18	NCB31HK-102A	CAPACITOR	0.001	50V
C19	QERF1CM-476	E CAPACITOR	47	16V
C20	QERF1HM-105	E CAPACITOR	1	50V

Symbol No.	Part No.	Part Name	Description	
C21	NCB31HK-222A	CAPACITOR	0.0022	50V
C22	NCB31HK-102A	CAPACITOR	0.001	50V
C23	QERF0JM-226	E CAPACITOR	22	6.3V
C24	QEPA1HM-224	NP E CAPACITOR	0.22	50V
C25	NCR31CK-153A	CAPACITOR	0.015	16V
C26	QEPA1HM-224	NP E CAPACITOR	0.22	50V
C27	NCB31HK-332A	CAPACITOR	0.0033	50V
C28	QEPA1HM-474	NP E CAPACITOR	0.47	50V
C30	QERF0JM-107	E CAPACITOR	100	6.3V
C31	NCB31HK-102A	CAPACITOR	0.001	50V
C32	NCB31HK-102A	CAPACITOR	0.001	50V
C33	QFN41HJ-823	M CAPACITOR	0.082	50V
C34	NCB31HK-102A	CAPACITOR	0.001	50V
C35	NCB31HK-102A	CAPACITOR	0.001	50V
C36	NCB31EK-103A	CAPACITOR	0.01	25V
C37	NCB31HK-332A	CAPACITOR	0.0033	50V
C38	QCYA1EK-104	CAPACITOR	0.1	25V
C40	QCYA1HK-152	CAPACITOR	0.0015	50V
C41	QCSA1HJ-330	CAPACITOR	33P	50V
C42	QCSA1HJ-330	CAPACITOR	33P	50V
C43	QCSA1HJ-561	CAPACITOR	560P	50V
C44	QCYA1HK-102	CAPACITOR	0.001	50V
C45	QCYA1EK-104	CAPACITOR	0.1	25V
C46	QCSA1HJ-330	CAPACITOR	33P	50V
C47	QCSA1HJ-330	CAPACITOR	33P	50V
C48	QCYA1EK-104	CAPACITOR	0.1	25V
C49	QCYA1EK-104	CAPACITOR	0.1	25V
C61	QCYA1EK-104	CAPACITOR	0.1	25V
C62	QCSA1HJ-100	CAPACITOR	10P	50V
C63	QCSA1HJ-100	CAPACITOR	10P	50V
C64	QERF1HM-105	E CAPACITOR	1	50V
C65	QEPA1HM-105	NP E CAPACITOR	1	50V
C66	QCYA1HK-103	CAPACITOR	0.01	50V
C67	QCYA1HK-103	CAPACITOR	0.01	50V
C68	QCYA1EK-104	CAPACITOR	0.1	25V
C69	NCB31CK-333A	CAPACITOR	0.033	16V
C70	QEA40HZ-224	E CAPACITOR (DOUBLE)	0.22F	5.5V
C71	NEE21EM-105RY	TANTAL CAPACITOR	1	25V
C72	NEE21EM-105RY	TANTAL CAPACITOR	1	25V
C73	QERF0JM-107	E CAPACITOR	100	6.3V
C74	NCF31CZ-104A	CAPACITOR	0.1	16V
C75	NCB31CK-223A	CAPACITOR	0.022	16V
C76	NCB31CK-223A	CAPACITOR	0.022	16V
C77	NCB31CK-223A	CAPACITOR	0.022	16V
C401	NFV31CJ-104AY	TF CAPACITOR	0.1	16V
C402	NCB31CK-333A	CAPACITOR	0.033	16V
C404	NCB31EK-153A	CAPACITOR	0.015	25V
C501	NEE21AM-475RY	TANTAL CAPACITOR	4.7	10V
C502	NEE21AM-475RY	TANTAL CAPACITOR	4.7	10V
L1	PU56181-151	COIL	150μH	
⚠ CF1	PU55407	RESONATOR		
⚠ X1	PGZ00857	CRYSTAL RESONATOR		
⚠ X2	PGZ01577	CRYSTAL RESONATOR		

Symbol No.	Part No.	Part Name	Description
K1	PGZ00354	FERRATE BEADS	
⚠ TH1	PU52108-2R2	POSITIVE THERMISTOR	
T1	YU41190	TRANS	
T2	YU41190	TRANS	
BKT1	PRD43842	BRACKET	2 PCS
SCW1	PRD30093	SCREW	2 PCS
SLD1	PRS40029	SHIELD PLATE	
SLD2	PRS40025	SHIELD CASE	
SLD3	PU61042	SHIELD COVER	
SLD4	PU61043	SHIELD PLATE	
TP1	PGZ01015	TEST PIN	X13(TP1-6,8-14)
TP7	PU56008	TEST-PIN	
CN1	PGZ01519-100	CONNECTOR	

6.4 POWER CTL [PAL] board assembly list 1 4 P
〈PRK20249B〉 for E version 1 4 P ☐☐☐☐☐

Symbol No.	Part No.	Part Name	Description
Q1	DTA114WK	TRANSISTOR	ROHM
Q2	DTC114WK	TRANSISTOR	ROHM
Q3	2SD601A	TRANSISTOR	MATSUSHITA
Q4	DTC143XK	TRANSISTOR	ROHM
Q5	DTA114TK	TRANSISTOR	ROHM
Q6	2SD601A	TRANSISTOR	MATSUSHITA
Q7	DTC114WK	TRANSISTOR	ROHM
D1	DAN202K	DIODE	ROHM
D2	DAN202K	DIODE	ROHM
D3	RD10EB1	ZENER DIODE	NEC
D5	DAN202K	DIODE	ROHM
D6	ERA81-004-F	DIODE	FUJIELECTRIC
D7	RD9.IEB3	ZENER DIODE	NEC
D8	DAN202K	DIODE	ROHM
R1	QRSA08J-332YN	RESISTOR	3.3K 1/10W
R2	QRSA08J-102YN	RESISTOR	1K 1/10W
R3	QRSA08J-104YN	RESISTOR	100K 1/10W
R4	QRSA08J-223YN	RESISTOR	22K 1/10W
R5	QRSA08J-473YN	RESISTOR	47K 1/10W
B6	QRSA08J-0R0Y	RESISTOR	0 1/10W
C1	NEE20JM-475RY	TANTAL CAPACITOR	4.7 6.3V
C2	NEE21DM-475RY	TANTAL CAPACITOR	4.7 20V
L1	PGZ00643	COIL	
⚠ L2	EXC-EMT102BC	N FILTER	
RY1	PGZ01743	RELAY	
CL1	PU55379	MINI CLAMP	4 PCS
CN1	PU58844-4	CONNECTOR	
CN2	PU58844-4	CONNECTOR	
CN3	PGZ00652-002	CONNECTOR	
⚠ CP1	ICP-F10	CIRCUIT PROTECTOR	
⚠ CP2	ICP-F10	CIRCUIT PROTECTOR	

POWER CTL SUB BOARD 1 4 P 1
〈PRK20261A〉

Symbol No.	Part No.	Part Name	Description
Q1	2SC4081(QRS)-X	TRANSISTOR	ROHM
Q2	2SC4081(QRS)-X	TRANSISTOR	ROHM
Q3	2SK621-X	F.E.T.	MATSUSHITA
D4	MA742-X	DIODE	MATSUSHITA
R1	NRSA63J-273N	RESISTOR	27K 1/16W
R2	NRSA63J-155N	RESISTOR	1.5M 1/16W
R3	NRSA63J-155N	RESISTOR	1.5M 1/16W
R4	NRSA63J-273N	RESISTOR	27K 1/16W
R6	NRSA63J-0R0N	RESISTOR	0 1/16W
C1	QCYA1EK-104Z	C CAPACITOR	0.1 25V
C2	NEE21DM-225RY	E CAPACITOR	2.2 20V

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V15447

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

BR-S422E/SA-R200E

[TIME CODE GENERATOR(Option)]

S-VHS VHS PAL 625

Hi-Fi

SPECIFICATIONS

GENERAL

Format	: VHS/S-VHS Europe standard
Signal system	: PAL
Power requirement	: DC 12 V
Power consumption	: 13 W (Max. 38 W with camera)
Dimensions	: 287.5 (W) x 244 (H) x 131.5 (D) mm
Weight	: 3.3 kg, 4.3 kg with battery and cassette
Temperature	
Operating	: 0°C to 40°C
Storage	: –20°C to 60°C
Operating humidity	: 30% to 80 %
Tape width	: 12.65 mm
Tape speed	23.39 mm/sec
Recording and Playback time	: 180 min. with SE-180

VIDEO

Y/C Input (50-pin camera connector)	
Y	: 1.0 Vp-p, 75 ohms, unbalanced
C	: 0.3 Vp-p (burst), 75 ohms, unbalanced
Output	
Composite	: 1.0 Vp-p, 75 ohms, unbalanced (BNC)
Y/C	: Y: 1.0 Vp-p, 75 ohms, unbalanced C: 0.3 Vp-p (burst), 75 ohms, unbalanced
Signal-to-noise ratio	: 45 dB (Rohde and Schwarz noise meter)
Horizontal resolution	: More than 400 lines (S-VHS) More than 250 lines (VHS)

AUDIO

Number of tracks	: 4 (Hi-Fi: 2/Normal: 2)
Input (Switchable)	
Line/MIC	: –60 dBs, 3 k-ohms, balanced (Hi-Fi/Normal) +4 dBs, 10 k-ohms, balanced (Hi-Fi/Normal)
Output	
Line	: –6 dBs, low impedance, unbalanced (Hi-Fi/Normal)
Earphone	: –60 to –12 dBs, 8 ohms
Speaker	: 0.5 W, 8 ohms
Dynamic range	: More than 80 dB (Hi-Fi)
Frequency response	: 20 to 20,000 Hz (Hi-Fi) 50 to 10,000 Hz (Normal)
Signal-to-noise ratio	: 42 dB (NR-off, Normal at 3 % distorsion)
Wow & flutter	: Less than 0.007 % WRMS (Hi-Fi) Less than 0.15 % WRMS (Normal)

ACCESSORIES

Provided accessory	: Carrying handle x 1

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November 1993

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:

1) Insulation Tape	3) Spacers
2) PVC tubing	4) Insulation sheets for transistors
5) Barrier	

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

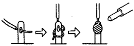


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

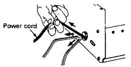


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

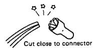


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

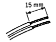


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

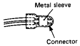


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

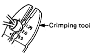


Fig. 6

(5) Check the four points noted in Fig. 7.

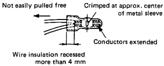

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

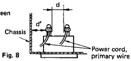


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

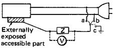


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

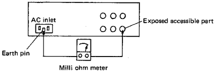


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

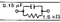
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

JVC

BR-S422E

VIDEO CASSETTE RECORDER
VIDEOKASSETTENREKORDER
MAGNETOSCOPE A CASSETTE

S VHS VHS PAL 625 Hi-Fi

PGD30002-438

SAFETY PRECAUTIONS

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

This unit should be used with 12 V DC only.
CAUTION:
To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTE:
The rating plate (serial number plate) is on the bottom of the unit.

CAUTION
To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

This unit is produced to comply with Directies 76/889/EEC and 82/499/EEC and 87/308/EEC.

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PRECAUTIONS

VCR

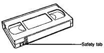
- Avoid using the recorder in places subject to the following conditions:
  - extreme heat, cold, or humidity,
  - dust,
  - near appliances generating strong magnetic fields,
  - vibrations, and
  - poor ventilation.
- Handle the recorder carefully.
  - Do not place anything heavy on the recorder.
  - Do not place any liquids on top of the recorder.
- During transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
  - Before packing, be sure to remove the cassette from the recorder.

VIDEO CASSETTES

- This recorder uses S-VHS and VHS cassettes.

  S-VHS: SE-120 for 120 minutes, SE-60 for 60 minutes, and SE-30 for 30 minutes of recording.

  VHS: E-180 for 180 minutes, E-120 for 120 minutes, E-60 for 60 minutes, and E-30 for 30 minutes of recording.
- To prevent accidental erasure, remove the cassette's safety tab. To record on a cassette whose safety tab has been removed, cover the hole with adhesive tape.



- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet) and dusty places.
- Place the cassettes in their cassette cases and position them vertically.
- Do not use tapes with a recording time of more than 180 minutes.
- Do not use S-VHS-C/VHS-C tapes using the cassette adapter, or the tape edge may be damaged during search.

CONDENSATION

- Be careful of moisture condensation.

  Do not use the recorder immediately after moving it from a cold place to a warm place. The water vapor in warm air will condense on the still-cold video head drum and tape guides and may damage the tape and the recorder.

  When condensation occurs, the OPERATE LED will light red and the DEW indicator will appear on the display. In this case, the recorder cannot be operated except to eject the cassette tape. Wait a few hours until the video head dries and the DEW indicator goes off before using the video recorder again.
- Condensation is likely to occur under the following conditions:
  - When the recorder is moved from a cold place to a warm place.
  - Extreme humidity.
  - When a cold room is heated, under cool wind from an air conditioner, etc.

PROTECTIVE CIRCUITS

- OPERATE OFF during battery operation

  During battery operation, the recorder is automatically set to OPERATE OFF to protect the recorder and battery pack if operation is continued when the OPERATE LED blinks red or beeps are heard from the speaker or EARPHONE jack. Replace the battery pack with a charged one.(When the recorder is set to OPERATE OFF while in the Record-Pause mode, the automatic record lock mechanism is engaged with the tape wrapped around the head drum.)
- To protect the tape

  In the Record-Pause mode, the recorder automatically reduces the tape tension and drum rotation stops after about 30 minutes. If further recording is required, press the camera's VTR start/stop button, or press PLAY. The drum will start rotating and recording will restart after 8 or 10 seconds. If you want to return to the Record-Pause mode when drum rotation has stopped, press the camera's VTR start/stop button twice. When the Still or Insert-Pause mode has been engaged for a certain period of time, the tape protection circuit functions as shown in the table below.

Elapsed time	Tape movement
3 minutes, 30 seconds	Advances by a few frames.
7 minutes	Advances by an additional few frames.
10 minutes, 30 seconds	Enters the Stop mode.

FEATURES

New Compact, Lightweight Design

At only 3.3 kilogrammes (not including tape and battery), the BR-S422E is the lightest dockable recorder in its class and its new streamlined compact design makes it easier to carry and less susceptible to breakage. Dockable with most JVC KY-series cameras, the BR-S422E offers you a level of convenience and mobility that no other mid-level recorder can match. Power consumption has also been reduced so you'll have to change batteries less often. And, since the BR-S422E uses full-size S-VHS tapes, up to 3 hours of recording is possible on a single tape.

High-Quality S-VHS Pictures

To provide pictures with detail and clarity, the BR-S422E incorporates JVC's advanced S-VHS technology for high-quality pictures with resolution of more than 400 lines. In addition, a 62-mm standard drum is used to ensure the best possible picture performance with minimal jitter. VHS recording is also possible.

Quick-Response Recording Start

In ENG applications, a few seconds can mean the difference between getting a shot and missing it altogether. To make sure you can start shooting the action as soon as it starts, the BR-S422E features a newly-developed Quick-Response Recording Start mechanism. You'll be able to go from the Rec-Pause mode to the Record mode in barely 1.3 seconds — with no distortion between takes. And if you want even faster response time, a newly-developed Quick AEF will start the recorder in about half a second.

Optional Plug-in Time Code Generator

To facilitate program-logging and simplify post-production, a plug-in Time Code Generator board (SA-R200E) capable of recording EBU-standard LTC or VITC time codes is available. Thanks to the BR-S422E's new rationalised design, the time code generator can easily be installed inside the recorder so there are no bulky extensions, and no significant additional weight. User bits featuring an internal real-time clock are provided for recording of additional data.

2-Channel Hi-Fi and 2-Channel Linear Audio

To assure maximum audio flexibility and top-quality sound, the BR-S422E features two Hi-Fi audio channels and two linear audio channels. Using two rotary FM-audio heads to record Hi-Fi audio signals on a separate layer of tape, the Hi-Fi VHS system assures superb sound quality with extended frequency response of 20 Hz to 20 kHz, a dynamic range of 80 dB, and virtually no wow and flutter. Dolby B* noise reduction is provided for the linear channels. To maintain the highest level of audio performance, balanced XLR audio input connectors are provided. Input levels are switchable between –60 dB and +4 dB to allow connection of professional microphones for interviews and other applications.

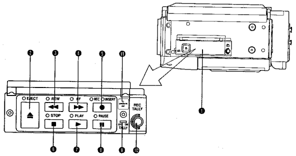
* Dolby and the Double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

Other Features

- Built-in AEQ generator
- Built-in loudspeaker
- REC REVIEW function
- Rotary erase heads
- Backlit LCD audio meter
- LCD display shows time counter data, lap time, and tape remaining time
- Heavy-duty diecast aluminum chassis
- LED operation indicators
- Battery power remaining indicator
- 5999H hour meter (switchable from tape counter)
- Self-diagnostic and maintenance-oriented design
- Video/Hi-Fi audio insert editing function

CONTROLS, INDICATORS AND CONNECTORS

OPERATION BUTTONS SECTION



① **Operation guard cover**
- Prevents erroneous operations while shooting. Also functions as a dust cover. When it is opened with the POWER switch set to ON, the VCR enters the OPERATE ON mode. The OPERATE LED lights green and the display panel also comes on.

② **EJECT button**
- Ejects the cassette when pressed in the Stop mode. If a camera is connected, cassettes can also be ejected in the Record-Pause mode. The LED lights during cassette ejection.
- This button functions even when the operation guard cover is closed.

③ **REW button**
- Starts rewind when pressed in the Stop mode. When a tape is fully rewound, the VCR enters the Stop mode.
- Starts high-speed reverse search at 7 times normal speed when pressed in the Play mode.

④ **FF button**
- Starts fast-forward when pressed in the Stop mode. When a tape is fully fast-forwarded, the VCR enters the Stop mode.
- Starts high-speed forward search at 7 times normal speed when pressed in the Play mode.

⑤ **REC/INSERT button**
- Starts recording when pressed together with the PLAY button. (The PLAY and REC indicator light during recording.)
- Engages the Insert-Pause mode when pressed together with the PAUSE button in the Record-Pause mode. (The INSERT and PAUSE button's indicators light.) If the PLAY button is pressed in the Insert-Pause mode, video/Hi-Fi audio insert editing will start. (☞ p.23)

⑥ **STOP button**
- Stops the tape. If this button is pressed while the tape is running, the LED indicator lights and the tape is completely withdrawn into the cassette. This state is referred to as the Stop mode.

⑦ **PLAY button**
- Starts playback. The LED will light.
- Re-starts normal playback when pressed in the Still mode.
- Re-starts recording when pressed in the Record-Pause mode.

⑧ **PAUSE button**
- Temporarily stops recording when pressed in the Record mode. The tape will rewind for a few seconds, and then the Record-Pause mode will be engaged. (☞ p.19)
- Displays a still picture when pressed in the Play mode.
- Engages frame advance when pressed in the Still mode.

⑨ **TALLY ON/OFF switch**
- Activates or defeats REC TALLY LED.

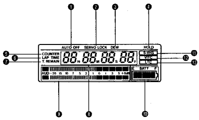
  ON: REC TALLY LED lights or blinks according to the situation.

  OFF: REC TALLY LED is always off. Set to this position when REC TALLY is unnecessary or you want to save battery power.

⑩ **REC TALLY indicator**
- Lights when the VCR is in the Record mode.
- Blinks when warning alarm is given.

⑪ **OPERATE SW button**
- Press to engage the OPERATE ON mode if the OPERATE LED doesn't light when the POWER ON/OFF switch is set to ON.

DISPLAY SECTION



① **AUTO OFF indicator**
- Comes on when malfunctions occur in tape running or in mechanism. (☞ p.24)

② **SERVO LOCK indicator**
- Comes on when the drum servo and capstan servo are out of their lock ranges or when there is no input video signal during recording.

③ **DEW indicator**
- Comes on when condensation occurs. All controls except EJECT become inoperative. (☞ p.24)

④ **HOLD indicator**
- Comes on when the HOLD button is pressed with the optional SA-R200E time code generator installed. (☞ p.26)

⑤ **COUNTER indicator**
- Comes on when the tape counter is selected with the SELECT button.

⑥ **LAP TIME indicator**
- Comes on when the lap time is selected with the SELECT button.

⑦ **T.REMAIN indicator**
- Comes on when the remaining tape time is selected with the SELECT button.

⑧ **Counter display**
- Displays tape counter, lap time, or remaining tape time.
- Displays hour meter data.
- Displays time code/user bits when the optional SA-R200E is installed. (☞ p.26)

⑨ **Audio level meter**
- Shows the audio level during recording and playback. Switching between Normal and Hi-Fi audio is done with the AUDIO OUT select switch.

⑩ **Battery indicator**
- Shows battery remaining time in 5 steps. When only 2 steps are left, the OPERATE and REC TALLY LEDs will start blinking red. (☞ p.24)

⑪ **S-VHS indicator**
- Comes on when recording or playing back in the S-VHS mode.

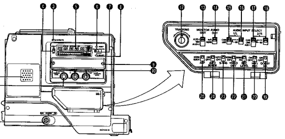
⑫ **VITC indicator**
- Comes on when the VITC is recorded with the optional SA-R200E installed.

⑬ **LTC indicator**
- Comes on when the LTC is recorded with the optional SA-R200E installed.

NOTES:
The BR-S422E's LCD panel may not work correctrly if there is external interferential noise. In this case, press the counter's RESET and SELECT buttons (☞ p.7) simultaneouly for several seconds. This will reset the internal microcomputer and recover normal operation.

* Keep in mind that stored time code data will be reset when the time code generator (SA-R200E) is installed.

CONTROLS AND SWITCHES SECTION



① **Speaker**
- Sound selected with the AUDIO OUT or MONITOR OUT switch can be monitored through this speaker in the Record, Record-Pause, or Stop mode. In the Play mode, sound recorded on the tape can be monitored. When an earphone is plugged into the EARPHONE jack, no sound is available from the speaker.
- Emits various warning alarms. (☞ p.24)

② **POWER ON/OFF switch**
- Set to ON to turn the power on.

③ **OPERATE LED**
- Lights green in normal operation (during OPERATE ON).
- Blinks green when drum rotation is stopped in the Rec-Pause mode.
- Lights or blinks red when malfunctions occur. (☞ p.24)

④ **LIGHT ON/OFF switch**
- Set to ON to light the display panel.
- Set to OFF to save power in battery operation.

⑤ **Display panel** (☞ p.6)

⑥ **RESET button**
- Resets the tape counter and lap time.

⑦ **UB/TC/COUNTER select switch**
- Selects the display mode on the counter.

UB:	Displays time code user bits data.
TC:	Displays time code counter data.
COUNTER:	Displays tape counter, lap time or remaining tape time. Selectable with the SELECT button.

⑧ **SELECT button**
- Switches the counter display between tape counter, lap time and remaining tape time when the UB/TC/COUNTER select switch is set to COUNTER.

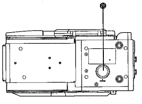
COUNTER:	Displays 4-digit tape counter.
LAP TIME:	Displays elapsed tape time in hours, minutes and seconds. Lap time is not counted during REW/FF.
T.REMAIN:	Displays remaining tape time in hours and minutes during recording. (Remaining tape time is updated once a minute.)

- Indicates hour meter data when pressed together with the REC button (with cassette ejected). (☞ p.16)

⑨ **TIME CODE GENERATOR operation guard cover**
- Remove the cover when the optional SA-R200E time code generator is installed.
- For SA-R200E operations, refer to p.25 "TIME CODE GENERATOR SA-R200E (OPTION)".

⑩ **AUDIO REC LEVEL L/R controls**
- Adjusts audio recording level for audio-1(L) and audio-2(R) channels when the REC LEVEL switch is set to "MANU". Adjust the level so that the meter deflects to about 0 dB at peak input.

⑪ **MONITOR LEVEL control**
- Adjusts the output level from the monitor speaker.
- Adjusts the EARPHONE jack output level from approx. –60 dBs to –12 dBs. (When the earphone's impedance is 8 ohms.)
- The warning alarm's level is fixed and cannot be adjusted with this control. (The level can be increased with the internal control. Consult a JVC service centre or authorised JVC service agent.)



⑫ **TRACKING control**
- Turn to minimise noise bars in the pictures or breaks in the Hi-Fi sound. Normally set to the centre position.

⑬ **MONITOR OUT select switch**
- Selects the audio signal to be output from the speaker or EARPHONE jack.

AUD-1(L):	To monitor the audio signal recorded on audio-1 or the left channel.
MIX:	To monitor the mixed sound of audio-1(L) and audio 2(R).
AUD-2(R):	To monitor the audio signal recorded on audio-2 or the right channel.

⑭ **AUDIO OUT select switch**
- Selects the audio signal for display on the audio level meter and for output from the AUDIO OUT terminals and monitor speaker.

Hi-Fi:	Outputs/displays the Hi-Fi audio signals.
NORM:	Outputs/displays the normal audio signals.

⑮ **AUDIO INPUT SELECT switch (AUD-1/L)**
- Selects the input signal (camera via 50-pin or Line AUD-1/L of AUDIO IN connector) to be recorded.

⑯ **AUDIO INPUT SELECT switch (AUD-1/L level)**
- Select +4 dB or –60 dB according to the level of the AUD-1/L line input signal.

⑰ **AUDIO INPUT SELECT switch (AUD-2/R)**
- Selects the input signal (camera via 50-pin, Line AUD-2/R of AUDIO IN connector or signal input to AUD-1/L) to be recorded.
- When set to AUD-1, the signal selected by the AUDIO INPUT SELECT (1/L) switch ⑮ is input and will be recorded in monaural. Set to this position when the connected camera's microphone is monaural or only a single microphone is used.

⑱ **AUDIO INPUT SELECT switch (AUD-2/R level)**
- Select +4 dB or –60 dB according to the level of the AUD-2/R line input signal.

⑲ **DOLBY NR ON/OFF switch**
- Activates or defeats Dolby NR function for normal audio.

⑳ **Hi-Fi REC ON/OFF switch**
- Activates or defeats Hi-Fi sound recording.

㉑ **REC LEVEL switch**
- Selects automatic or manual recording level setting.

MANU:	The audio recording level can be adjusted with the AUDIO REC LEVEL controls.
FIX:	The audio recording level is fixed at the standard level.

㉒ **VIDEO OUT switch**

NORM:	Normally set to this position.
EDIT:	Set to this position when using this recorder as a feeder in dubbing.

㉓ **S-VHS select switch**
- Selects the recording mode.

AUTO:	The recording mode is switched automatically according to the type of cassette.
OFF:	Set to this position when recording in the VHS mode with an S-VHS cassette.

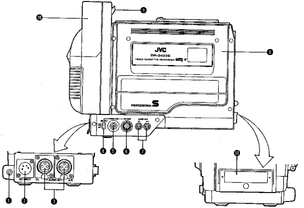
㉔ **AUTO REVIEW ON/OFF switch**
- Activates or defeats AUTO REVIEW function in the Record-Pause mode. (☞ p.19)

㉕ **AEF select switch**
- Activates or defeats Automatic Editing Function. (☞ p.19)

NORM:	AEF (Automatic Editing Function) is activated to prevent picture distortion at edit points in assemble recording.
QUICK:	The preroll time will be shorter for prompt response in recording; the picture at the edit point will be distorted.

㉖ **Breaker**
- When a camera with power consumption of 24 W or more is connected, this automatically turns the power off when the current exceeds the capacity.
- If the Breaker cuts the power when the connected camera's power consumption is less than 24 W, press this button, then turn the power on and engage the OPERATE ON mode again. If normal operation is not restored, consult a JVC service centre or authorised JVC service agent.

CONNECTORS SECTION



① **EARPHONE jack**
- Connect a 3.6 mm dia. earphone. (Monaural)
- Outputs the audio signal selected with AUDIO OUT select switch or MONITOR OUT switch.
- Also outputs various warning alarms. (☞ p.24)

② **DC INPUT**
- Input connector for DC 12 V power supply. Connect the AA-G10E battery charger.

③ **AUDIO IN connectors (AUD-1/L, AUD-2/R)**
- Audio input connectors for normal and Hi-Fi audio when the AUDIO INPUT SELECT switch is set to LINE for each channel.

④ **VIDEO OUT/Y/C OUT SELECT switch**
- Selects the video signal to be output from the VIDEO OUT or Y/C OUT connector. (Audio signal is not changeable.)
  CAM: Through-outputs camera signal.
  VTR: Outputs VTR's EE-picture or playback picture.
  OFF: No video signal is output. Set to this position to save power.

⑤ **VIDEO OUT connector (BNC)**

⑥ **Y/C OUT connector (7-pin)**

⑦ **AUD OUT connectors (AUD-1/L, AUD-2/R)**
- Outputs audio signals selected with the AUDIO OUT select switch.

⑧ **Cassette cover**

⑨ **Battery case cover lock release button**
- Open the battery case while pressing this button.

⑩ **Battery case**
- Install the NB-G1U or an NP-1 type (Sony*) battery pack. (☞ p.11)

⑪ **D-Sub 50-pin connector**
- Connect a video camera equipped with a 50-pin VTR docking connector. (DC 12 V outlet, max. 2A)
- The RM-G410E editing control unit is not connectable.

* Sony is a registered trademark of Sony Corporation.

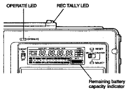
POWER SUPPLY

BATTERY OPERATION

- Use the NB-G1U or an NP-1 type (Sony*) battery pack.
- The BATT indicator on the display shows the remaining battery capacity.
- When the battery power drops below a certain level, the battery alarm will sound and the OPERATE/REC TALLY LEDs will blink red to indicate that the battery pack needs recharging. In this case, replace the battery pack with a fully charged one.

* Sony is a registered trademark of Sony Corporation.

NOTES:
- When you supply power both from the DC input and the battery pack, power will be supplied first from the DC input.
- If the warning indications appear when the battery supplied from the DC input nears exhaustion (refer to p. 24), be sure to remove the battery connected to the DC input to switch the power supply source to the battery pack, otherwise switching of the power supply may not work properly.



RECHARGING THE NB-G1U BATTERY PACK (Option)

- To charge the battery pack, use the AA-G10E battery charger.
- The AA-G10E can accept 4 battery packs at a time. One battery is charged at a time, taking about 60 to 90 minutes per battery pack. After the 4 battery packs have been charged in sequence, they are charged in parallel for an additional hour in the normal charging mode.

1. Insert a battery pack into each compartment of the AA-G10E with the contacts first and the printed side to the left, until it locks onto place.
2. Press the AA-G10E 's POWER button to ON.
3. Press the CHARGE button.

NOTES:
- Be careful not to over-charge the battery. Discharge the battery completely before recharging. If the battery is over-charged, the battery power may be reduced.
- For details, refer to the AA-G10E 's instruction manual.

ATTACHING A BATTERY

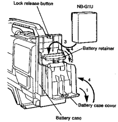
Attaching the NB-G1U battery pack

- Be sure the power is off when attaching.

1. Open the battery case cover while pressing the lock release button.
2. Pull the battery retainer down as shown by the arrow.
3. Install the battery pack with its terminals facing the VTR.
4. Pull up the battery retainer as shown by the arrow and replace the battery case cover.

NOTES:

- To exchange the battery pack, make sure that the POWER switch is set to "OFF".
- Be sure to shut the battery retainer first before replacing the battery case cover.


Lock release button
NB-G1U
3
4
2
Battery retainer
4
1
Battery case cover
Battery case

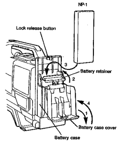
Attaching the NP-1 battery pack

- Be sure the power is off when attaching.

1. Open the battery case cover while pressing the lock release button.
2. Pull up the battery retainer as shown by the arrow.
3. Install the battery pack with its terminals facing the VTR.
4. Replace the battery case cover.

NOTES:

- To exchange the battery pack, make sure that the POWER switch is set to "OFF".


NP-1
Lock release button
3
Battery retainer
2
4
1
Battery case cover
Battery case

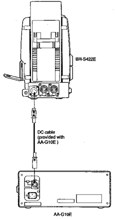
AC OPERATION VIA THE BATTERY CHARGER

- Be sure that the POWER switches of the BR-S422E and AA-G10E are set to "OFF".

1. Connect the AA-G10E DC OUT connector and the BR-S422E DC IN connector with the DC cable provided with the AA-G10E.
2. Set the AA-G10E VCR switch to "ON", then set the POWER switch to "ON".
3. Set the BR-S422E POWER switch to "ON".

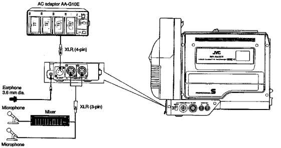
NOTES:

- Refer to the AA-G10E 's instructions for details.

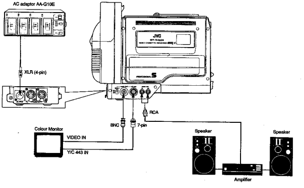

BR-S422E
DC cable
(provided with
AA-G10E)
AA-G10E

CONNECTIONS

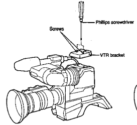
RECORDING


AC adaptor AA-G10E
XLR (4-pin)
Earphone
3.6 mm dia.
Microphone
Mixer
XLR (3-pin)
Microphone
JVC
PROFESSIONAL S

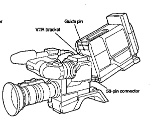
PLAYBACK


AC adaptor AA-G10E
XLR (4-pin)
JVC
PROFESSIONAL S
RCA
BNC
7-pin
Colour Monitor
VIDEO IN
Y/C 443 IN
Speaker
Speaker
Amplifier

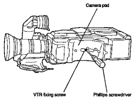
CONNECTING TO A CAMERA


Phillips screwdriver
Screws
VTR bracket

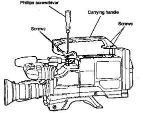
1. Detach the camera adapter from the camera. Attach the shoulder pad. When docking with the KY-27E, attach the VTR bracket as illustrated. (When installing the camera adapter on the KY-27E, the VTR bracket should be removed.)


Guide pin
VTR bracket
50-pin connector

2. Align the BR-S422E's guide pin with the V groove of the camera's VTR bracket after removing the cap of the 50-pin connector. Securely engage the BR-S422E's 50-pin connector to the camera's.


Camera pad
VTR fixing screw
Phillips screwdriver

3. Secure the BR-S422E to the camera by inserting the VTR fixing screw through the camera's shoulder pad, using a Phillips screwdriver.

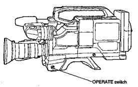

Phillips screwdriver
Carrying handle
Screws
Screws

4. Secure the provided carrying handle to the camera and the BR-S422E with four screws, using a Phillips screwdriver as illustrated.

NOTES:
Be sure to match the camera microphone and camera impedance levels otherwise the audio level may be low when recorded. When using JVC cameras, we recommend use of the MV-P602U, MV-P612U, or M-K50U camera microphone.

PREPARATIONS

1. Set the POWER switch to "ON".
2. **Recording**
   - Set the camera's OPERATE switch to "VTR STBY" to engage the OPERATE ON mode.
   - Set the BR-S422E's AUDIO INPUT SELECT switch to either "CAM" or "LINE".
   - Set the AUDIO INPUT LEVEL select switch according to the input signal level.



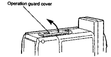
NOTES:
- When the DEW indicator blinks, do not load a cassette as condensation may have occurred. (☞ p.3)

3. Press EJECT to open the cassette cover. The cover opens with the EJECT LED blinking.

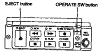
4. Load the cassette. Close the cassette cover gently.
5. To take the cassette out of the holder, engage the Stop mode or the Record-Pause mode (when connected to the camera) before pressing the EJECT button.

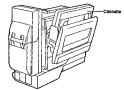
NOTES:
- The cassette cannot be ejected when the power is off.
- When the EJECT button is pressed in the Record-Pause mode, it takes about 7 seconds before the cassette is unloaded and the holder opens, as the tape is wrapped around the head drum in the Record-Pause mode.

Playback
- Open the operation guard cover to engage the OPERATE ON mode.



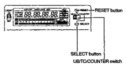
* If the OPERATE LED doesn't light when the POWER switch is set to ON, press the OPERATE SW button.



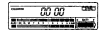


COUNTER DISPLAY

The BR-S422E's time counter shows tape time, lap time in hours, minutes, and seconds, and remaining tape time. (Lap time is not counted during REW/FF.) The counter can be switched to an hour meter data display which indicates the total drum rotating hours. When the optional SA-R200E timecode generator is installed, timecode/user bits display is also available. (☞ p.26)

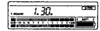


Resetting the counter
In the tape counter and lap time modes, you can press the RESET button to reset the time counter to zero.



Remaining tape time display
You can check the remaining tape time in the Record mode.

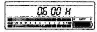
1. Set the UB/TC/COUNTER switch to "COUNTER".
2. Press SELECT in the Record or Record-Pause mode until T.REMAIN appears on the display.
   - Counter shows the remaining tape time in hours and minutes.
   - The remaining time is updated once a minute.
3. Press SELECT again to return to the normal time counter.



NOTES:
- For a short period of time after recording is started or during playback, rewind, or fast-forward, the remaining tape time will be shown as "– H – – M".
- The remaining tape time may not be accurate when a E-240 cassette is used.

Hour meter data display
The counter display can also show the total drum rotating hours.

1. Eject the cassette.
2. Close the cassette cover.
3. Press REC and SELECT for more than 3 seconds.
   - Counter shows total drum rotating hours in 4 digits. (Unit is "hours".)
   - If the cassette cover is opened, the hour meter display is not available.
4. Press STOP to return to the normal tape counter.



NOTES:
- For timecode/user bits display, ☞ p.27, 28.

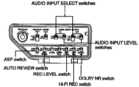
RECORDING

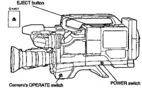
BASIC PROCEDURE

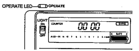
Make various settings as required before recording.

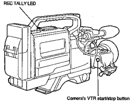
- Select the recording mode with the S-VHS select switch. (☞ p.18)
- Select the audio signal to be recorded for AUD-1 and AUD-2 with AUDIO INPUT SELECT switches. (☞ p.8)
- Select +4 dB or –60 dB with AUDIO INPUT LEVEL switch if you have set the AUDIO INPUT SELECT switch to "LINE".
- Set the Hi-Fi REC switch as desired. (☞ p.8)
- Set the DOLBY NR switch as desired. (☞ p.8)
- Set the REC LEVEL switch as desired. (☞ p.8)
- Set the AEF switch as desired. (☞ p.8)
- Set the AUTO REVIEW switch as desired. (☞ p.8)

1. Set the POWER switch to "ON".
2. Set the camera's OPERATE switch to "VTR SAVE" first, and then to "VTR STBY".
   - Power is supplied to the BR-S422E. The OPERATE LED lights green and the display panel comes on.
3. Press EJECT to open the cassette holder. Load the cassette correctly and close the cassette holder.
   NOTES:
   - Tape loading starts after the cassette is loaded and the cassette holder is closed. It takes about 10 seconds before the Record-Pause mode is engaged.
4. Set the camera's switches. (Refer to the camera's instruction manual.)
5. Aim the lens at the subject and adjust the focus and zoom.
6. Press the camera's VTR start/stop button to start recording.
   - When this button is pressed, "REC Tally" in the viewfinder and the REC TALLY indicator blink 4 times a second. When the VCR enters the Record mode, the indicators stop blinking and remain steadily lit.
7. To stop recording, press the VTR start/stop button to engage the Record-Pause mode. To re-start recording, press it again.
8. To engage the Power save mode, set the camera's OPERATE switch to "VTR SAVE".
   - The BR-S422E's power is turned off in the Record-Pause mode (Rec-Lock mode). When the camera's OPERATE switch is set back to "VTR STBY", the VTR's power is activated again.


AUDIO INPUT SELECT switches
AUDIO INPUT LEVEL switches
AEF switch
AUTO REVIEW switch
REC LEVEL switch
DOLBY NR switch
Hi-Fi REC switch


EJECT button
EJECT
Camera's OPERATE switch
POWER switch


OPERATE LED
OPERATE
LIGHT
ON
OFF
COUNTER
00 00
BATT


REC TALLY LED
Camera's VTR start/stop button

NOTES:

- When the VTR's power is re-activated, drum rotation may not be stable. Wait at least 8 seconds before restarting recording.
- If the Record-Pause mode continues for more than 30 minutes, drum rotation automatically stops and the OPERATE LED blinks green. If further recording is required, press the camera's VTR start/stop button or press PLAY. The drum will start rotating and recording will restart after 8 or 10 seconds. To return to the Record-Pause mode when drum rotation has stopped, press the camera's VTR start/stop button twice. Wait at least 8 seconds before restarting recording to ensure stable drum rotation.
- When the recorder will not be used for a long time or the recording has been finished, remove the battery pack or set the POWER switch to "OFF".
- Before an important recording, make a trial recording to check that the recorder functions correctly.
- It is not possible to record on a cassette with no safety tab. (☞ p. 3)

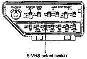
- **When you want to save power, set the REC TALLY, VIDEO OUT SELECT, and LIGHT switch to OFF.**

SETTING THE S-VHS SELECT SWITCH

- Set the S-VHS select switch as required.

AUTO: The recording mode will automatically switch according to the type of cassette. When an S-VHS cassette is loaded, recording will be in the S-VHS mode; with a VHS cassette, it will be in the VHS mode.

OFF: Set to this position to record in the VHS mode with an S-VHS cassette. VHS cassettes will also be recorded in the VHS mode.


S-VHS select switch

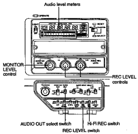
AUDIO LEVEL ADJUSTMENT

- Hi-Fi/Normal audio L/R levels can be adjusted with the AUDIO REC LEVEL controls.

1. Set the REC LEVEL switch to "MANU".
2. Adjust the audio level so that the audio level meters deflect to about 0 dB when the loudest sound is input.
   - The audio level meters display either the Hi-Fi or normal audio level as selected with the AUDIO OUT select switch.
   - The REC LEVEL controls can adjust Hi-Fi and normal audio levels simultaneously.

NOTES:

- When set to "FIX", the REC LEVEL controls have no effect and the audio level is fixed at the standard level.
  The BR-S422E incorporates an audio limiter to avoid distortion with excessive input. However, the normal audio limiter circuit can be switched off with an internal switch. To do this consult a JVC service centre or authorised JVC service agent.
- When recording normal track sound only, set the Hi-Fi REC switch to "OFF".
- When the monitor volume level is set too high, howling may result.


Audio level meters
OPERATE
88.88.88.88.
RESET
SELECT
MONITOR LEVEL control
REC LEVEL controls
AUDIO OUT select switch
Hi-Fi REC switch
REC LEVEL switch

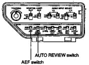
AUTOMATIC EDITING FUNCTION (AEF)

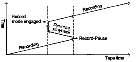
This function helps prevent picture distortion at edit points in assemble recording.

- When the camera's VTR START/STOP button is pressed during recording, the tape rewinds by a few seconds and stops in the Record-Pause mode. When recording is re-started by pressing the camera's VTR START/STOP button, recording does not take place for the first 1.3 second period, during which time tracking is stabilised for a smooth transition to the next edit. (Back-space edit)
- In addition to the frame servo circuit, this recorder has rotary erase heads to realise smooth assemble edits without rainbow noise (colour beats). When the AEF switch is set to QUICK, the preroll time will be shorter (0.6 sec.) for prompt response in recording; the picture at the edit point will be distorted.

NOTES:

- The preroll function can be canceled by resetting an internal switch. To do this, consult a JVC service centre or authorised JVC service agent.


AUTO REVIEW switch
AEF switch


Time
Record mode engaged
Recording
Reverse playback
Record-Pause
Recording
Tape time

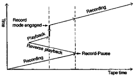
Auto Review Function
This function lets you confirm the quality of the recording on the viewfinder whenever the Record-Pause mode is engaged.

1. Set the camera's RET switch to "ON".
2. Set the AUTO REVIEW switch to "ON".
3. When the camera's VTR START/STOP button is pressed during recording, The last recorded segment is played back in reverse a little further than with the normal AEF, and the tape stops in the Record-Pause mode.

- With the AEF switch set to "NORM": the tape plays back in reverse for about 4 seconds, and stops in the Record-Pause mode.
- With the AEF switch set to "QUICK": the tape plays back in reverse for about 3.5 seconds, and stops in the Record-Pause mode.

NOTES:

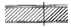
- Do not move the unit violently in the Record-Pause or Record-Lock mode, otherwise frames may be missed.


Time
Record mode engaged
Recording
Playback
Reverse playback
Record-Pause
Recording
Tape time

ROTARY ERASE HEADS

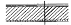
The rotary erase heads are mounted on the head drum to erase the video tracks before recording.

- Rotary erase head


Recording start point
Direction of tape travel

During recording, the rotary erase head first erases the existing track, then the video head records the new video signal on it. In contrast to fixed erase head systems, rainbow noise and triangle noise do not appear at edit points with this system.

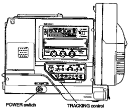
- Fixed erase head


Noise produced at the edit point
Recording start point

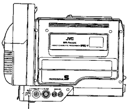
PLAYBACK

BASIC PROCEDURE

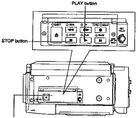
1. Set the BR-S422E's POWER to "ON", then open the operation guard cover. (OPERATE ON)


POWER switch
TRACKING control

2. Set the VIDEO OUT/Y/C OUT select switch to "VTR".
3. Load a recorded cassette correctly.


JVC
S
VIDEO OUT/Y/C OUT select switch

4. Press PLAY to start playback.
5. Press STOP to stop playback.


PLAY button
STOP button
EJECT
REW
FF
REC CHECK
STOP
PLAY
PAUSE
REC TALLY
Operation guard cover

NOTES:

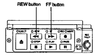
- When viewing the playback picture on the viewfinder, set the RET switch to "ON". (When docked with JVC's KY-27E, the playback picture automatically appears on the viewfinder when the Play mode is engaged.)
- If noise appears on the playback picture, turn the TRACKING control until the noise disappears. Normally set the TRACKING control at centre position.

SEARCH FUNCTION

- Press REW in the Play mode for high-speed reverse search at 7 times normal speed. The search mode continues for as long as the button is pressed.
- Press FF in the Play mode for high-speed forward search at 7 times normal speed. The search mode continues for as long as the button is pressed.

NOTES:

- In the Search mode, there may be some noise, vertical picture vibration, or no colour. This is not due to any defect of the recorder.
- No Hi-Fi audio is output in the Search mode.

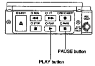

REW button
FF button

STILL AND FRAME ADVANCE

1. Press PAUSE to view a still picture in the Play mode.
2. Press PAUSE while in the Still mode to advance the picture frame by frame.
3. Press PLAY to resume normal playback.

NOTES:

- To protect the tape and video heads, the VCR will automatically advance the tape a few frames if the Still mode continues for about 3 minutes and 30 seconds. After about 10 1/2 minutes, the Stop mode is automatically engaged.
- Still pictures may contain some noise or vibrate vertically. This is not due to any defect of the recorder.

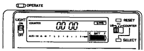

PAUSE button
PLAY button

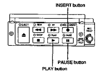
VIDEO/HI-FI AUDIO INSERT EDITING

The BR-S422E has an insert editing function which enables you to replace existing video and Hi-Fi audio tracks with new material.

- Connect a microphone to the BR-S422E.
- Set the AUDIO INPUT select switch and AUDIO INPUT LEVEL select switch as required.

1. Set the camera's OPERATE switch to "CAM ON–VTR SAVE".
2. Open the operation guard cover to engage the OPERATE ON mode.
3. Play back the tape and press PAUSE at the position you wish to end insert editing (Insert OUT point). Reset the tape counter to "0000".
4. Rewind the tape to the position you wish to start insert editing (Insert IN point).
5. Press REC and PAUSE together in the Still mode. (The VCR prerolls the tape and enters the Record-Pause mode.)
6. Press REC and PAUSE together again to engage the Insert-Pause mode.
   - The INSERT and PAUSE buttons' LEDs light.
7. Press PLAY to start insert editing.
   - The PLAY and INSERT buttons' LEDs light.
   - The video and Hi-Fi audio tracks enter the Record mode and the normal audio track enters the Play mode.
8. Press PAUSE to temporarily stop insert editing. The Insert-Pause mode is engaged. Press PLAY to re-start insert editing.
   - Insert editing automatically stops at the counter "0000" position and the VCR enters the Play mode.
   - To stop insert editing before "0000", press STOP. (The tape will unload.)





NOTES:

- Insert editing is not possible on cassettes with no safety tab.
- Normal audio insert editing is not possible.
- Hi-Fi audio will be replaced regardless of the setting of the Hi-Fi REC switch.
- Insert editing is not possible with a tape which does not contain control signals. If the tape reaches a non-recorded segment during insert recording, the VCR automatically enters the Play mode.
- If VCR remains in the Insert-Pause mode for more than about 10 minutes and 30 seconds, the recorder automatically unloads the tape and enters the Stop mode.
- To execute insert editing with best quality, be sure to adjust the tracking before editing.

WARNING MESSAGES

The BR-S422E has a comprehensive array of warning indicators. The following chart summarises the operation of the warning system.

Warning	Remarks	Warning Indications						VCR operation
		OPERATE LED	REC TALLY	Display	Alarm sound	Camera Tally		
						REC Tally	BATT Tally	
SERVO LOCK	Head drum and capstan are not locked during recording. No video signal input. (in Rec)	✻	✻	SERVO LOCK	▦	✻		Continues.
AUTO OFF	Drum/capstan/reel malfunctions. Mechanism is abnormal.	✻		AUTO OFF	▓			OPERATE OFF after 10 seconds.
DEW	Condensation warning.	●		DEW	▦			Stops. All controls become inoperative except EJECT.
TAPE END	About 3 minutes before tape end. (in Rec)	◑	◑		▮	◑		Continues.
	Tape end.	●	✻		▓ (in Rec/Stop)	✻		Stops.
BATTERY	Slightly before the battery is exhausted.	◑	◑ (in Rec)	E BATT F ▮▯▯▯	▮ (in Rec/Stop)	◑ (in Rec)	◑	Continues.
	Battery exhausted.	●	✻	E BATT F ▯▯▯▯	▓	✻	●	OPERATE OFF after Record-Pause.

- In normal operation, the OPERATE LED light is green. When a malfunction occurs, it lights or blinks red depending on the situation.
- The alarm sound is superimposed on the audio output from the EARPHONE jack and the speaker.
- Camera Tally operation varies with different cameras.

● : Lights
◑ : Blinks once a second
✻ : Blinks 4 times a second
▓ : Continuous beep
▮ : Beeps once a second
▦ : Beeps 4 times a second

TROUBLESHOOTING GUIDE

Symptoms	Check points
No power is applied to the recorder.	• Is the power unit connected correctly? • Is the battery pack charged? • Is the camera's OPERATE switch set to "VTR STBY" for camera recording? • Is the operation guard cover opened for playback or insert editing?
Recording or insert editing cannot be started.	• Is the safety tab of the cassette removed? Reseal the slot with adhesive tape.
Normal audio is not output from AUD-2.	• Is the LTC ON/OFF switch (☞ p. 26) set to "ON"? Even if the SA-R200E is not installed, no audio signal is output from AUD-2 when the LTC ON/OFF switch is set to "ON".
No playback picture is available.	• Is the VIDEO OUT SELECT switch set to "OFF" or "CAM"? Set it to "VTR" for playback.
Noise appears in the playback picture.	• Turn the TRACKING control.
Playback picture is blurred or interrupted.	• Video heads may be dirty. Clean the heads with a head cleaning tape. If this fails, consult your JVC dealer.
Playback, fast-forward, or rewind impossible.	• The cassette may have completed the fast-forward or rewind operation.

TIME CODE GENERATOR SA-R200E (Option)

With the optional SA-R200E time code generator installed, EBU-standard LTC or VITC time code recording is possible.
(LTC is recorded on the AUD-2 normal audio track.)

INSTALLATION

1. Remove the 4 screws from the side panel (controls and switches section).
2. Open the side panel as illustrated.
3. Select the lines on which VITC data is to be inserted with the rotary switches SW 1/SW 2 on the SA-R200E.

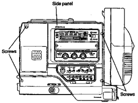
No. of switch	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Insertion line	7H	8H	9H	10H	11H	12H	13H	14H	15H	16H	17H	18H	19H	20H	21H	22H

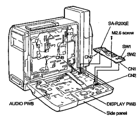
Factory preset SW 1: C (19H)
SW 2: E (21H)

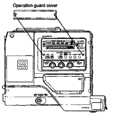
NOTES:

- The BR-S422E is preset to add the AEQ (Automatic Equaliser) reference signal to line 11. Do not select line 11 for VITC insertion. If you want to defeat the AEQ signal or change its insertion line, consult a JVC service centre or authorised JVC service agent.

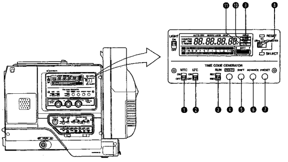
4. Attach the SA-R200E to the recorder by connecting the CN 1 connector on the SA-R200E to the CN 2 connector on the side panel's DISPLAY PWB and the CN 2 connector on the SA-R200E to the CN 9 connector on the side panel's AUDIO PWB. Secure them with the provided M 2.6 screw as illustrated.
5. Replace the side panel and fasten the four screws.
6. Remove 2 screws and detach the operation guard cover for setting of the SA-R200E. (☞ p.27)


Side panel
Screws
Screws


SA-R200E
M2.6 screw
SW1
SW2
CN9
CN2
CN1
CN2
AUDIO PWB
DISPLAY PWB
Side panel


Operation guard cover

CONTROLS AND OPERATIONS


⑪
⑩
⑨
⑧
LIGHT
ON
OFF
COUNTER
LAP TIME
T.REMAIN
88.88.88.88
AUTO OFF
SERVO LOCK
HOLD
RESET
UB
TC
COUNTER
SELECT
TIME CODE GENERATOR
VITC
LTC
ON
OFF
RUN
REC
FREE
HOLD
SHIFT
ADVANCE
PRESET
①
②
③
④
⑤
⑥
⑦

① **VITC ON/OFF switch**
ON: To record VITC time codes.
OFF: VITC time codes are not recorded.

② **LTC ON/OFF switch**
ON: To record LTC time codes. When set to this position, AUD-2 normal audio cannot be recorded.
OFF: LTC time codes are not recorded.

③ **REC RUN/FREE RUN switch**
REC: The time code runs only during recording. (Rec Run mode)
FREE: The time code runs in real time, regardless of the recorder's operating mode. (Free Run mode)

④ **HOLD button**
- Resets the current counter data; the leftmost digit will blink.

⑤ **SHIFT button**
- Shifts the blinking digit to the right.

⑥ **ADVANCE button**
- Advances the value of the blinking digit.

⑦ **PRESET button**
- Transfers the data set with the HOLD, SHIFT, and ADVANCE buttons to the time code generator.

⑧ **UB/TC/COUNTER select switch**
- Selects the display mode on the counter.

UB: Displays user bits.
TC: Displays time code data
COUNTER: Displays tape counter modes selected with the SELECT button.

⑨ **HOLD indicator**
- Comes on when the HOLD button is pressed.

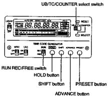
⑩ **VITC indicator**
- Comes on when VITC is recorded.

⑪ **LTC indicator**
- Comes on when LTC is recorded.

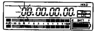
TIME CODE/USER BIT SETTING

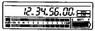
Setting the time code

1. Set the REC RUN/FREE RUN switch as desired. (☞ p.26)
2. Set the UB/TC/COUNTER select switch to "TC".


UB/TC/COUNTER select switch
RUN REC/FREE switch
HOLD button
SHIFT button
PRESET button
ADVANCE button

3. Press HOLD for more than 2 seconds.
   - The counter resets with the leftmost digit blinking.
   - The HOLD indicator comes on.
4. Press ADVANCE.
   - This advances the value of the blinking digit. Set to the desired value.
5. Press SHIFT.
   - The blinking digit shifts to the right.
6. Repeat steps 4 and 5 until all data is set.
   - The maximum setting range is 23:59:59:24. Any value that exceeds this will be rejected.
7. Press PRESET
   - The preset data will be transferred to the time code generator. The HOLD indicator goes off and the counter stops blinking.
   - In the Free Run mode, time code starts running.


-00.00.00.00.
HOLD
BATT


12H34M56S00F
BATT

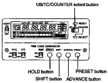
NOTES:

- The AEF switch should be set to "NORMAL" in the Rec Run mode, otherwise time code continuity will be lost at the edit point.
- If the time code has run for more than 30 minutes in the Free Run mode, it will keep running for at least 30 minutes even after the recorder's power is turned off.

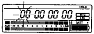
Setting the user bits

"User bits" is a portion of the time code signal allocated to the user. It can be used to record the operator number or reel numbers.

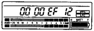
1. Set the UB/TC/COUNTER select switch to "UB".


UB/TC/COUNTER select button
HOLD button
SHIFT button
PRESET button
ADVANCE button

2. Press HOLD for more than 2 seconds.
   - Counter shows "00 00 00 00" with leftmost digit blinking.
   - The Hold indicator will light.
3. Press ADVANCE to set the value of the blinking digit as desired.
   - All 8 digits can be changed from "0" to "F".
4. Press SHIFT to move the blinking digit.
5. Repeat steps 3 and 4 until all data is set.


-00 00 00 00
HOLD
BATT

6. Press PRESET.
   - The preset data will be transferred to the time code generator.
   - Hold indicator goes off and the counter stops blinking.
   - User bit data will not change regardless of the setting of the REC RUN/FREE RUN switch.


00 00 EF 12
BATT

NOTES:

- When you want to correct the data during setting, repeat steps 3 to 6 for time code setting, 2 to 5 for user bits setting.
- If you mistakenly press the HOLD button, press it again to cancel.

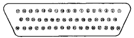
SA-R200E SPECIFICATIONS

Signal system : EBU-standard
Time set : 8 digits (hours, minutes, seconds, frames)
User bits : 8 digits
Power consumption : 0.05 W
Weight : approx. 30 g

CONNECTOR SPECIFICATIONS

50-PIN CONNECTOR

Pin assignment



Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
①		⑪		㉑	GND	㉛		㊶	Y IN
②		⑫		㉒		㉜	RETURN AUDIO	㊷	GND
③		⑬		㉓	MIC 2 [C]	㉝	GND	㊸	
④		⑭		㉔	MIC 2 [H]	㉞		㊹	
⑤	GND	⑮	MIC GND	㉕	CAMERA POWER ON	㉟		㊺	
⑥	GND	⑯	MIC 1 [C]	㉖		㊱		㊻	
⑦		⑰	MIC 1 [H]	㉗	VTR START/STOP	㊲		㊼	
⑧		⑱	RETURN Y	㉘		㊳	EE [H]	㊽	VTR STATUS
⑨		⑲		㉙		㊴	+ 12 V	㊾	REC WARNING
⑩		⑳	C IN	㉚		㊵	+ 12 V	㊿	BATT ALARM

7-PIN CONNECTOR

Pin No.	Signal
①	Y signal
②	GND (Y signal)
③	
④	
⑤	C signal
⑥	GND (C signal)
⑦	

XLR 3-PIN CONNECTOR

Pin No.	Signal
①	GND
②	HOT
③	COLD

XLR 4-PIN CONNECTOR

Pin No.	Signal
①	GND
②	
③	
④	+ 12 V

SPECIFICATIONS

GENERAL

Format : VHS/S-VHS Europe standard
Signal system : PAL
Power requirement : DC 12 V
Power consumption : 13 W (Max. 38 W with camera)
Dimensions : 287.5 (W) x 244 (H) x 131.5 (D) mm
Weight : 3.3 kg, 4.3 kg with battery and cassette
Temperature
Operating : 0°C to 40°C
Storage : –20°C to 60°C
Operating humidity : 30% to 80 %
Tape width : 12.65 mm
Tape speed 23.39 mm/sec
Recording and Playback time : 180 min. with SE-180

VIDEO

Y/C Input (50-pin camera connector)
Y : 1.0 Vp-p, 75 ohms, unbalanced
C : 0.3 Vp-p (burst), 75 ohms, unbalanced
Output
Composite : 1.0 Vp-p, 75 ohms, unbalanced (BNC)
Y/C : Y: 1.0 Vp-p, 75 ohms, unbalanced
C: 0.3 Vp-p (burst), 75 ohms, unbalanced
Signal-to-noise ratio : 45 dB
(Rohde and Schwarz noise meter)
Horizontal resolution : More than 400 lines (S-VHS)
More than 250 lines (VHS)

AUDIO

Number of tracks : 4 (Hi-Fi: 2/Normal: 2)
Input (Switchable)
Line/MIC : –60 dBs, 3 k-ohms, balanced (Hi-Fi/Normal)
+4 dBs, 10 k-ohms, balanced (Hi-Fi/Normal)
Output
Line : –6 dBs, low impedance, unbalanced (Hi-Fi/Normal)
Earphone : –60 to –12 dBs, 8 ohms
Speaker : 0.5 W, 8 ohms
Dynamic range : More than 80 dB (Hi-Fi)
Frequency response : 20 to 20,000 Hz (Hi-Fi)
50 to 10,000 Hz (Normal)
Signal-to-noise ratio : 42 dB (NR-off, Normal at 3 % distorsion)
Wow & flutter : Less than 0.007 % WRMS (Hi-Fi)
Less than 0.15 % WRMS (Normal)

ACCESSORIES

Provided accessory : Carrying handle x 1

Design and specifications subject to change without notice.

SECTION 1
GENERAL DESCRIPTION AND DISASSEMBLY

Note: The numbers of screws shown on page 1-9 respectively accord with numbers of screws appearing in this section.

1.1 REMOVAL OF ENCLOSURE PARTS

Most of external covers and outer fittings of the BR-S422E are mutually fixed with other parts (for example, the front cover is fixed together with the top cover and the bottom cover). Therefore, removal of an external part needs to remove screws retaining other parts beforehand.

1.1.1 Cassette panel assy

(1) Remove two caps and two screws ①.
(2) Turn the power ON.
(3) Push the EJECT button and take out the cassette panel assy.

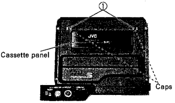


Fig. 1-1-1 Removal of Cassette panel assy

1.1.2 Left side cover

(1) Remove the cassette panel assy (Refer to 1.1.1).
(2) Remove four screws ② and take out the left side cover.

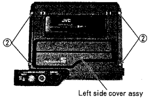


Fig. 1-1-2 Removal of Left side cover

1.1.3 Battery holder assy

(1) Open the battery holder cover.
(2) Remove a screw ③ and take out the battery holder cover.
(3) Remove four screws ④ and take out the battery holder assy.

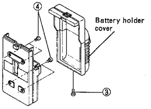


Fig. 1-1-3 Removal of Battery holder assy

1.1.4 Top cover assy

Note:Pay careful attention to wires and flat cables connected to the top cover.

(1) Open the operation cover.
(2) Loosen four screws ② (see Fig. 1-1-2), four screws ⑥ (see Fig. 1-1-5) and two screws ⑦ (see Fig. 1-1-6).
(3) Remove four screws ⑤ and take out the top cover assy.

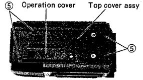


Fig. 1-1-4 Removal of Top cover assy

1.1.5 Right side cover assy

Note:Pay careful attention to wires and flat cables connected to the right side cover assy.

(1) Remove four screws ⑥ and take out the right side cover assy.

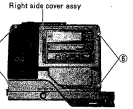


Fig. 1-1-5 Removal of Right side cover assy

1.1.6 Front cover assy

Note:Pay careful attention to wires and flat cables connected to the front cover assy.

(1) Loosen four screws ② (see Fig. 1-1-2) and four screws ⑥ (see Fig. 1-1-5).
(2) Remove two screws ⑦ and a screw ⑧ and take out the front cover assy.

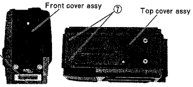


Fig. 1-1-6 Removal of Front cover assy

1.1.7 Rear panel

(1) Remove two screws ② (see Fig. 1-1-2) and two screws ⑥ (see Fig. 1-1-5) (rear panel side).
(2) Remove the connector box assy (refer to 1.1.8).
(3) Remove four screws ⑨ and take out the rear panel.

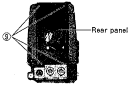


Fig. 1-1-7 Removal of Rear panel

1.1.8 Connector box assy

Note:Pay careful attention to wires and flat cables connected to the connector box assy.

(1) Remove two screws ⑩ and two screws ⑪ and take out the connector box assy.

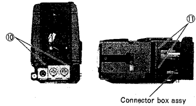


Fig. 1-1-8 Removal of Connector box assy

1.1.9 Bottom cover assy

(1) Remove the left and right side covers (refer to 1.1.2, 1.1.5).
(2) Remove the rear panel (refer to 1.1.7).
(3) Remove the connector box assy (refer to 1.1.8).
(4) Remove two screws ⑫ and two screws ⑬ take out the bottom cover assy.

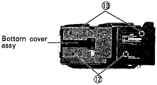


Fig. 1-1-9 Removal of Bottom cover assy

1.2 REMOVAL OF MAIN BOARDS

Note: Whenever intending to remove or reinstall any board, make sure to disconnect the power cord. All boards that were removed or disconnected once must be reinstalled or reconnected as they were.

Group	Board Name	Removing Procedure
A	**01 VIDEO** **02 C. RF** **03 A. EQ** **05 SYSCON/SERVO** **06 REGULATOR** **07 AUDIO** **08 DISPLAY** **11 PRE/REC JUNC**	(1) Remove the right side cover assy (refer to 1.1.5). (2) Proceed to do things described in "1.2.1 Group A"
B	**04 PRE/REC**	(1) Remove the left side cover assy (refer to 1.1.2). (2) Proceed to do things described in "1.2.2 Group B"
C	**10 MOTHER**	(1) Remove the bottom cover assy (refer to 1.1.9). (2) Remove the right side cover assy (refer to 1.1.5). (3) Remove the VIDEO, the SYSCON/SERVO, the REGULATOR and the PRE/REC JUNC board. (4) Proceed to do things described in "1.2.3 Group C"
D	**14 POWER CTL** **15 CONNECTOR**	(1) Remove the connector box assy (refer to 1.1.8). (2) Proceed to do things described in "1.2.4 Group D"
E	**18 OPERATION**	(1) Remove the top cover assy (refer to 1.1.4). (2) Proceed to do things described in "1.2.5 Group E"

1.2.1 Group A

- VIDEO board -

(1) Remove two screws ⑭ and open the video board.

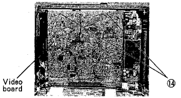

Video board
⑭

Fig. 1-2-1 Removal of Video board

- S/S board -

(1) Open the video board.
(2) Remove two screws ⑮ and take out the board.

- REGULATOR board -

(1) Open the video board.
(2) Remove a screw ⑯ and take out the board.

- PRE/REC JUNC board -

(1) Open the video board.
(2) Remove two screws ⑰ and take out the board.

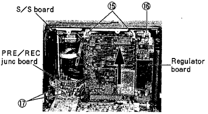

S/S board
⑮
⑯
PRE/REC junc board
Regulator board
⑰

Fig. 1-2-2 Removal of S/S, Regulator, PRE/REC junc board

- AUDIO board -

(1) Disconnect the flat wire.
(2) Remove eight screws ⑱ and take out the board.

- DISPLAY board -

(1) Disconnect the flat wire.
(2) Remove four screws ⑳ and take out the board.

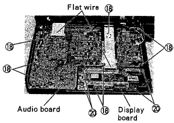

Flat wire
⑱
⑱
⑱
⑱
Audio board
⑳
⑱
Display board
⑳

Fig. 1-2-3 Removal of Audio and Display board

1.2.2 Group B

- PRE/REC board -

(1) Disconnect the flat wire.
(2) Remove two screws ㉑ and take out the board.

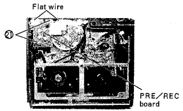

Flat wire
㉑
PRE/REC board

Fig. 1-2-4 Removal of PRE/REC board

1.2.3 Group C

- MOTHER board -

(1) Disconnect the flat wire (refer to Fig. 1-2-3).
(2) Remove a screw ㉔ and take out the Mecha JUNC board.
(3) Remove four screws ㉒ and take out the frame from the main-deck.
(4) Remove five screws ㉓ and take out the board.

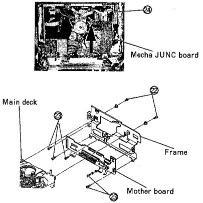

㉔
Mecha JUNC board
Main deck
㉒
㉓
Frame
Mother board
㉓

Fig. 1-2-5 Removal of Mother board

1.2.4 Group D

- POWER CTL board -

(1) Remove three screws ㉔ and take out the board.

- CONNECTOR board -

(1) Unolder the BNC and the Y/C connector.
(2) Remove three screws ㉕ and take out the board.

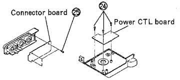

Connector board ㉕
㉔
Power CTL board

Fig. 1-2-6 Removal of Power CTL and Connector board

1.2.5 GROUP E

- OPERATION board -

(1) Remove two screws ㉖ and take out the holder assy.
(2) Remove four screws ㉗ and take out the board.

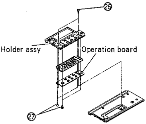
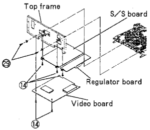

㉖
Holder assy
Operation board
㉗

Fig. 1-2-7 Removal of Operation board

1.3 REMOVAL OF CASSETTE HOUSING

(1) Remove the left side cover assy (refer to 1.1.2).
(2) Remove the top cover assy (refer to 1.1.4).
(3) Remove the right side cover assy (refer to 1.1.5).
(4) Remove the front cover assy (refer to 1.1.6).
(5) Remove the rear panel (refre to 1.1.7).
(6) Remove five screws ⑭ securing the video, the syscon/servo and the regulator boards (refer to 1.2.1) and remove two screws ㉙ then take out the top frame..
(7) Remove four screws ㉘.
(8) Set the cassette housing to the "EJECT" condition.
(9) Pull the whole of the cassette housing frontwards while release its foot from the hole of the main deck one by one.


Top frame
S/S board
㉙
⑭
Regulator board
Video board
⑭

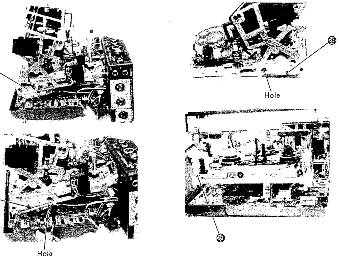

㉘
㉘
Hole
㉘
Hole
㉘

Fig. 1-3-1 Removal of Cassette housing

1.4 INTERNAL SWITCHES

1.4.1 01VIDEO board

Symbol No.	Switch Name	Initial Setting	Function
SW1	**Detail switch**		**ON:** 2MHz signal is raised up by 1.5 to 2.0 dB to emphasize detail in VHS mode. **OFF:** Normal operation.

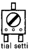
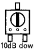
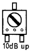
1.4.2 03AUTO EQ board

<table>
<tr><th>Symbol No.</th><th>Switch Name</th><th>Initial Setting</th><th>Function</th></tr>
<tr><td>SW1-1</td><td>Power switch for AUTO EQ (Always ON setting)</td><td rowspan="3">

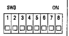
SW1
ON
1
2
3
4
5
6

</td><td>Usually set to ON position.</td></tr>
<tr><td>1-2
1-3
1-4</td><td>AUTO EQ line select switch</td><td>In the S-VHS mode, select a reference signal addition line for AUTO EQ circuit with SW1-2, SW1-3 and SW1-4.
<table>
<tr><th>SW1-2</th><th>SW1-3</th><th>SW1-4</th><th>LINE No.</th></tr>
<tr><td>ON</td><td>ON</td><td>ON</td><td>NON-ADDITION</td></tr>
<tr><td>ON</td><td>ON</td><td>OFF</td><td>11H</td></tr>
<tr><td>ON</td><td>OFF</td><td>ON</td><td>12H</td></tr>
<tr><td>ON</td><td>OFF</td><td>OFF</td><td>13H</td></tr>
<tr><td>OFF</td><td>ON</td><td>ON</td><td>14H</td></tr>
<tr><td>OFF</td><td>ON</td><td>OFF</td><td>15H</td></tr>
<tr><td>OFF</td><td>OFF</td><td>ON</td><td>16H</td></tr>
<tr><td>OFF</td><td>OFF</td><td>OFF</td><td>17H</td></tr>
</table></td></tr>
<tr><td>1-5
1-6</td><td>Not used</td><td></td></tr>
</table>

1.4.3 07AUDIO board

Symbol No.	Switch Name	Initial Setting	Function
SW21 (CH1) 22 (CH2)	**MIC AMP GAIN setting switch**	**OFF** 	To adjust sensitivity of LINE IN (−60dB) MIC AMP by 10dB up and down. Initial setting LINE IN −60dB 10dB down LINE IN −50dB 10dB up LINE IN −70dB
SW23	**NORMAL AUDIO LIMITER switch**	**ON** 	**ON:** Limiter circuit is activated with +6dB of standard. **OFF:** Limiter circuit is inactivated.

1.4.4 08 DISPLAY board

Symbol No.	Switch Name	Initial Setting	Function
SW3-1	BM switch		**ON :** LTC's bi-phase mark phase correction circuit is activated. **OFF :** LTC's bi-phase mark phase correction circuit is inactivated.
3-2	Not used		—
3-3	AEF (Auto Editing Function) switch (having priority over others)		**ON :** AEF is inactivated (without back-space and picture dropout). **OFF :** Normal operation (to be operated by the AEF switch on the side panel).
3-4	EEP ROM clear ON/OFF switch		**ON :** EEP ROM CLEAR circuit is activated. **OFF :** EEP ROM CLEAR circuit is inactivated.
3-5	ZERO FRAME EDITING switch		**ON :** ZFE is inactivated. (Recording slightly overlaps at editing point at which time code is partially erased.) **OFF :** Normal operation.
3-6	DEW warning cancel ON/OFF switch		**ON :** DEW warning is forcibly canceled and recording is enabled. (DEW warning appears in the display.) Monitor speaker's alarm sound is cut off. **OFF :** Normal operation.
3-7	Not used		—
3-8	Not used		—

1.4.5 09 TIME CODE board (SA-R200E : Optional)

Symbol No.	Switch Name	Initial Setting	Function
SW1 SW2	VITC insertion line select switch	SW1 : C(19H) SW2 : E(21H)	VITC insertion lines are individually settable.

SW No.	0	1	2	3	4	5	6	7
Insertion line	7H	8H	9H	10H	11H	12H	13H	14H
SW No.	8	9	A	B	C	D	E	F
Insertion line	15H	16H	17H	18H	19H	20H	21H	22H

1.5 HOUR METER DISPLAY

This model is equipped with an hour meter of internal memory storage type (used for EEP-ROM).
The counter display can also show the total drum rotating hours.

(1) EJECT the cassette tape.
(2) Close the cassette cover.
(3) Press REC and SELECT buttons for more than 3 seconds.
·Counter shows total drum rotating hours.
(4) Press STOP button to return to the normal counter.

1.5.1 How to reset the hour meter

(1) EJECT the cassette tape.
(2) Close the cassette cover.
(3) Set the DIP switch 3-4 on the 08 DISPLAY board to ON position.
(4) Press SELECT button for more than 3 seconds.
(5) Display the "**EEP cLEA**" on the counter display then the hour meter is rested.
(6) Change the DIP switch to OFF position.

1.6 BATTERY CONNECTOR

Battery connector assy : Part No. **PGJ05027**

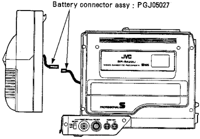

Battery connector assy : PGJ05027

Fig. 1-6-1 Battery connector assy

1.7 EMERGENCY EJECT

When the VTR enters the AUTO OFF state and the cassette tape cannot be ejected, take out the cassette tape according to the following procedure.

(1) Turn the power off of the VTR.
(2) Remove the cassette panel so that the tape is exposed (see 1.1.1, page 1-1).
(3) Remove the right side cover assy (see 1.1.5, page 1-1).
(4) Remove the VIDEO board and the S/S board (see 1.2.1, page 1-4).
(5) Turn the pulley of the loading motor installed on the back side of the main deck with a screwdriver or the like toward the arrow direction.
(6) If the tape comes loose, turn the pulley of the clutch mechanism to wind the tape for pulling in the slack of the tape.
(7) Repeat the above steps (5) and (6) until the tape is restored in the STOP mode.
(8) In the STOP mode, slide the lock plate or the lock plate's pin that is locking the cassette housing in the arrow direction to eject the cassette tape.

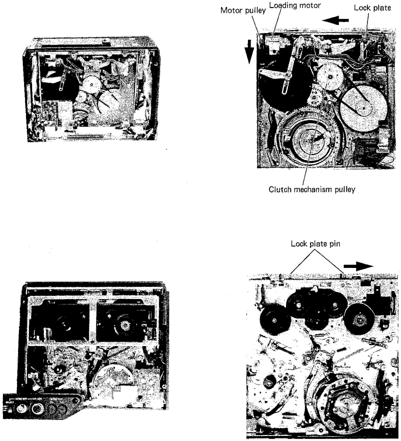
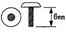
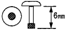
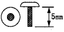
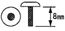
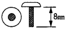
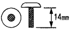
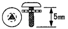
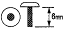
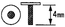
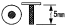
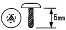
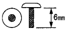
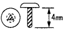
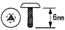


Fig. 1-7-1 Emergency eject

TABLE OF SCREWS USED IN THIS SET

Note: The numbers of screws shown below respectively accord with numbers of screws appearing in this section.

① (black)  SDSP2606M	②,⑥ (silver)  SC43397-010 (M3)	③ (black)  SDSP3005M	④,⑤,⑧,⑨,⑩,⑫  SDSP3008M (black)	⑦ (black)  SDSP4008M
⑪,⑬ (black)  SDSP3014M	⑭,⑮,⑯ (gold)  PRD44050-02 (M2.6)	⑰,⑳,㉑,㉔,㉕ (gold)  SDSP2606Z	⑱ (gold)  YQM30032-49 (M2..6)	㉒,㉙ (gold)  PRD30093 (M2.6)
㉓ (gold)  SDST2605Z	㉖ (black)  SDSP2006M	㉗ (gold)  SDSF2004Z	㉘ (gold)  SDST2606Z	

SECTION 2
MECHANISM ADJUSTMENT

Note: The numbers of screws and slit washers shown back of this section respectively accord with numbers of them appearing in this section.

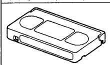
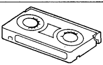
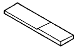
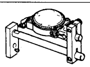
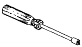
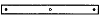
2.1 PREPARATION

2.1.1 Precautions

(1) When using a soldering iron, disconnect the power cord after heating it.
(2) When disconnecting connectors, do not pull connector cables by a strong force.
(3) Do not disturb adjusting parts such as screws thoughtlessly as there is a trouble of unknown reason.

2.1.2 Jigs and special tools for mechanism adjustment

For mechanism adjustment, the following jigs and special tools are required.

Alignment tapes MHPE,MBAE-3,MBPE-X,MH-F8	Cassette torque meter PUJ42881	Parallel check plate PUJ50204(0.1mm)/PGJ04039(0.15mm)	Microchecker PUJ49712-2
			
Taper nut driver PUJ50637	Microchecker attachment PGJ04006		
			

- **General tools required besides above special tools**
- Nut-driver (7 mm)
- Hex. key (0.9 mm, 1.27 mm)
- Ordinary (+) screwdrivers [PGJ04037(3 mm), PGJ04038(2.6 mm)]

Table 2-1-1 Jigs and special tools

2.1.3 Specifications of alignment tapes

·MHPE

Video signal	Audio signal	Application	Remark
VHS SP mode Stairstep	6kHz	·For check adjustment of interchangeability. ·For adjustment of PB switching point.	MH-2 stairstep signal substitutable.

·MBAE-3

Video signal	Audio signal	Application	Remark
—	1kHz (Guard band recording)	For rough adjustment of stereo A/C head height.	Only MHAE-3 part name changed.

·MBPE-X

Video signal	Audio signal	Application	Remark
Stairstep (1 field no-recording every 5 frames.)	6kHz	For rough adjustment of X-value.	Only MHPE-X part name changed.

·MH-F8

No.	PB time	Video signal	Audio signal	Application
1	5 minutes	—	Carrier only	Check and adjustment of interchangeability of mechanism.
2	5 minutes	Stairstep	Carrier only	Check and adjustment of interchangeability of mechanism.
3	5 minutes	—	1kHz (±50kHz DEV)	Check and adjustment of FM audio PB circuit.

2.2 PERIODIC REPLACEMENT OF MAIN PARTS

Periodic inspection and maintenance are needed in order to ensure performance and reliability. The following table has been compiled simply to give a general idea regarding maintenance and inspection.

In practice, the periods indicated will vary widely according to environmental and usage conditions. Also be aware that rubber parts may deform and age even when the equipment is not used.

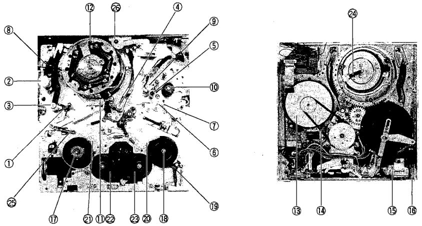
	No. *1	Part Name	Part No.	Standard service period *2										Ref. section	Remarks
				500	1000	1500	2000	2500	3000	3500	4000	4500	5000		
Tape transport system	①	Tension pole assy	PRD43771A-03	★	★	★	★	★	★	★	★	★	★	—	
	②	Impedance roller	PRD44135-01-01											—	
	③	SP. pole base assy	YQ40653B											—	
	④	TU. pole base assy	YQ40509D											—	
	⑤	TU. guide pole Lower flange	PRD44733 PRD44094											—	
	⑥	Capstan shaft	—											—	
	⑦	Guide arm assy	PQ40993B											—	
	⑧	Full erase head assy	PRD43795A-01	★	★	★	★	★	★	★	●	★	★	2.3.8	
	⑨	A/C head	PGZ01675	★	★	★	★	★	★	★	●	★	★	2.3.7	Excluding A/C head board
	⑩	Pinch roller	PQ41125A	★	★	★	●	★	★	★	●	★	★	2.3.5	
	⑪	Drum assy	PDV2308A	★	★	★	★	★	○/★	★	●	★	★	2.3.9	
	⑫	Upper drum assy	PRD20443D	★	★	★	●	★	★	★	↑	★	★	2.3.1/2.3.2	Included in Drum assy
Driving system	⑬	Capstan motor	PGZ01728-01-01								●			2.3.11	
	⑭	Reel belt	PQM30003-12				○				●			2.3.11	
	⑮	Loading motor	PGZ01939								●			2.3.10	
	⑯	Loading belt	PRD30022-19				○				●			2.3.10	
	⑰	SP. reel disk	PGZ01341				△				○/△			2.3.13	
	⑱	TU. reel disk	PGZ01342				△				○/△			2.3.14	
	⑲	Search brake assy	PQ40858B								●			2.3.6	
	⑳	REW brake assy	PQ40860B-3								●			2.3.6	
	㉑	FF brake assy	PRD44028A								●			2.3.6	
	㉒	SP. clutch	YU40427								○			2.3.13	*3
	㉓	TU. clutch	PU56650-1-4								○			2.3.14	*3
Others	㉔	Brush assy	YU40548-1-1				●				●			2.3.12	
	㉕	Tension band assy	PQ40851B				●				●			2.3.4/2.5.1	*4
	㉖	Head cleaner	PQ44837		●		●		●		●		●	2.3.3	Not included in Drum assy

*1 Symbol numbers correspond to numbers in Fig. 2-2-1.
*2 Know the standard service period by hour meter.
*3 Check torque at every servicing.
*4 Check back tension at every servicing.

★=Cleaning.
○=Check and Replace if necessary, or Check and Clean.
●=Replacement.
↑=Same as above.
△=Oiling.

2.2.1 Location of main parts

Note: Symbol numbers correspond to numbers in the table on page 2-2.


⑫
㉖
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⑳
⑱
㉔
⑬
⑭
⑮
⑯

Fig. 2-2-1

2.2.2 Maintenance step of main parts

Check, and replace if necessary.

Replace.

Adjustment after replacement.

1. 1000H, 3000H and 5000H maintenance

START

At 3000H only
Check the drum assy (see 2.6.3).

Replace the Head cleaner (see 2.3.3).

No.	Adjustment item	Ref. Sec.
①	Clean the tape transport system.	2.2.5

FINISH

2. 2000H maintenance

START

Check the Reel belt
Cracks and dusts are not observed in the appearance.

Check the Loading belt
Cracks and dusts are not observed in the appearance (see 2.3.10).

Replace the Pinch roller (see 2.3.5).

Replace the Tension band assembly (see 2.3.4, 2.5.1).

Replace the Head cleaner (see 2.3.3).

Replace the Upper drum assembly (see 2.3.1).
Replace the Brush assembly (see 2.3.12).

No.	Adjustment item	Ref. Sec.
①	Check the tape transport system.	2.7
②	Clean the tape transport system.	2.2.5
③	Confirm the Tension pole adjustment.	2.5.1
④	Confirm centering and relative height.	2.3.2 2.3.1
⑤	Adjustment required after replacement of the drum assembly.	2.2.3

FINISH

3. 4000H maintenance

START

Check the SP. and TU. clutch (see 2.3.13, 2.3.14).
Check the SP. and TU. reel disk (see 2.3.13, 2.3.14).

Replace the Loading motor (see 2.3.10).
Replace the Loading belt (see 2.3.10).

Replace the Pinch roller (see 2.3.5).

Replace the FF brake (see 2.3.6).
Replace the REW brake (see 2.3.6).
Replace the Search brake (see 2.3.6).

Replace the Tension band assembly (see 2.3.4, 2.5.1).

Replace the Full erase head (see 2.3.8).

Replace the Capstan motor (see 2.3.11).
Replace the Reel belt (see 2.3.11).

Replace the A/C head (see 2.3.7).

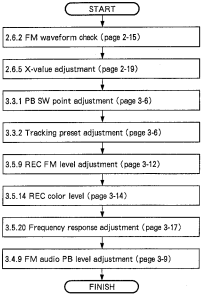
Replace the Drum assembly (see 2.3.9).
Replace the brush assembly (see 2.3.12).

Replace the Head cleaner (see 2.3.3).

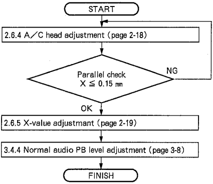
No.	Adjustment item	Ref. Sec.
①	Check the tape transport system.	2.7
②	Clean the tape transport system.	2.2.5
③	Confirm the Tension pole adjustment.	2.5.1
④	Adjustment required after replacement of the A/C head.	2.2.4
⑤	Adjustment required after replacement of the drum assembly.	2.2.3

FINISH

2.2.3 Adjustments required after replacement of drum assembly


START
2.6.2 FM waveform check (page 2-15)
2.6.5 X-value adjustmant (page 2-19)
3.3.1 PB SW point adjustment (page 3-6)
3.3.2 Tracking preset adjustment (page 3-6)
3.5.9 REC FM level adjustment (page 3-12)
3.5.14 REC color level (page 3-14)
3.5.20 Frequency response adjustment (page 3-17)
3.4.9 FM audio PB level adjustment (page 3-9)
FINISH

2.2.4 Adjustments required after replacement of A/C head


START
2.6.4 A/C head adjustment (page 2-18)
Parallel check
X ≦ 0.15 mm
NG
OK
2.6.5 X-value adjustmant (page 2-19)
3.4.4 Normal audio PB level adjustment (page 3-8)
FINISH

2.2.5 Cleaning

Although periodical cleaning of parts of the tape transport system is desirable, it is almost impossible to put it into practice. Therefore, it is strongly recommended to clean the tape transport system when a set is brought in to undergo repair and check. For cleaning use fine woven cotton cloth moistened with ethyl alcohol.

(1) Video heads
Dirty video heads get playback picture rough and invisible in the extreme case.
For cleaning the video head, lightly press quality paper moistened with ethyl alcohol to the upper drum by finger while turning the upper drum.
Note: Since the video head is weak against vertical force (applied in the up-down direction), moving of cleaning paper may possibly damage the video head.

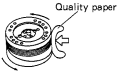

Quality paper

Fig. 2-2-2 Cleaning of Upper drum

(2) Tape guides
Dirty tape guides not only increase video heads in getting dirty much more but also cause damage to tape.

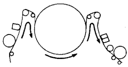


Fig. 2-2-3 Tape guides

(3) Brush
Dirty and dusty brush causes horizontal snow noise in playback picture.

(4) A/C head and FE head
For cleaning them, scrub the head with an applicator moistened with ethyl alcohol.

2.2.6 Oiling and greasing

If oil or grease on the other party is old and dirty, wipe it off and apply new oil or grease to it, too.

(1) Oil and grease used for this set are as follows.

Item	Name	JVC Part No.
Oil	Cosmo Hydro HV56	COSMO-HV56
<General spindle oil (low viscosity) is substitutable>		
Grease	Moriton Grease (black)	MOS2-C
	Floil (light brown)	KANTO-GB-TS-1
	Beacon-325 (cream)	PGJ04040

(2) Apply grease every 4000 hours of operation or taking an opportunity of parts replacement.

2.3 REPLACEMENT OF MAIN PARTS

***Note:** For parts replacement, take out the cassette panel assy (see 1.1.1, page 1-1) and the left side cover assy (see 1.1.2, page 1-1).*

No. **Item** **Adjustment and Check**

1 Upper drum assembly

— Removal —

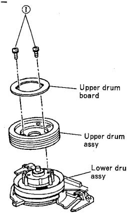


Fig. 2-3-1 Removal of Upper drum

***Note:** • When re-installing the upper drum assembly, put it right down on the lower drum assembly with care not to touch the heads.*
• For cleaning the heads, press quality paper moistened with alcohol to the drum head with fingers while turning the upper drum assembly counterclockwise. At that time, do not move cleaning paper nor the upper drum vertically to each other.

(1) Set the cassette housing to the EJECT condition while remove the cassette panel and the left side cover assembly (see 1.1.1 and 1.1.2, page 1-1).

(2) Remove the PRE/REC board assy (see 1.2.2, page1-4).

(3) Unsolder the relay pin terminal of the Upper drum board and remove the board.

(4) Remove two screws ① and lift the upper drum upwards to detach it.

— Reinstallation —

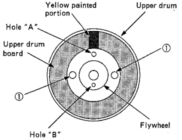


Fig. 2-3-2 Reinstallation of Upper drum and board

***Note:**Proceed to the following reassembling very carefully not to touch and damage the drum head.*

(5) Clean the contact surfaces of the upper drum assembly and the lower drum assembly with alcohol.
***Note:**Dusty contact surface causes maladjustment of the relative height of the heads. If the relative height of the heads is incorrect, the maximum levels of the CH-1 and CH-2 FM waveforms are observed different from each other when vary with the tracking control.*

(6) Install the upper drum assembly so that the hole "A" of the upper drum assembly and the hole "B" of the flywheel are positioned to each other at an angle of 180° .

(7) Tighten two screws ① evenly.

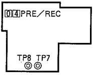
(8) Check right centering of the upper drum (see 2.3.2, page 2-7)

(9) Put the UPPER DRUM board on the upper drum assembly so that the yellow painted portion of the board and the hôle "B" of the flywheel are positioned to each other at an angle of 180° and solder the board.

(10) Clean the drum assembly on the whole (particularry the upper drum). (See 2.2.5, page 2-5.)

— Check and Adjustment —

— Location of TPs —



(11) Check the relative height according to the following procedure.
① Set the alignment tape MHPE and connect an oscilloscope's probe with TP7 on 04PRE/REC board while connecting its other probe with TP8 on 04PRE/REC board for external trigger.
② Adjust the tracking control to confirm that waveforms of CH-1 and CH-2 simultaneously become maximum.
③ When they extremely differ from each other in the level or time, remove the upper drum to clean its bottom surface and the upper surface of the lower drum's flywheel. repeat the above steps reinstallation.

(12) Perform the adjustments required after replacement of the drum assembly as described in 2.2.3, page 2-5.

No.	Item	Adjustment and Check

2 Centering of upper drum

If the upper drum is so installed as its center is off the center of the drum shaft, it causes jitters and other troubles. This matter (item) generally not check, however, when jittter remarkably appears in the picture, check neither wobbling in the upper drum rotation nor eccentricity of its shaft.

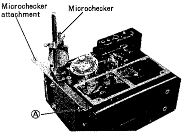


Fig. 2-3-3 Position of Microchecker installation

Cautions to handle microchecker

①Keep the microchecker out of any shock or vibration since it is high precision instrument.

②Do not apply unnecessary force to the probe.

③Although the outer ring of the micrometer is turnable approximately in a range of ±10 graduations, do not turn it with strong force (more than 300g-cm).

④Be careful not to touch the probe with video heads directly.

⑤When setting the microchecker, make sure that the probe always orientates the center of the drum for working.

⑥If rubbing or grating sound occurs in measuring, it results from abnormal contact of the probe. In such a case, check the upper drum and the tip of the probe whether dust or other contamination is on them, or not.

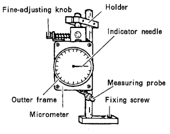


Fig. 2-3-4 Microchecker : PUJ49712-2

(1) **Required tool:**
- Screw: SDSP3006Z
- Microchecker: PUJ49712-2
- Microchecker attachment: PGJ04006

(2) Set the microchecker attachment on the panel by the portion Ⓐ with a SDSP3006Z screw. For this mounting, insert plain washers (about 2.5mm thick) under portion Ⓐ.

(3) Carefully set the micrometer not to knock it against the upper drum.

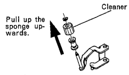
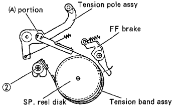
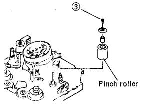
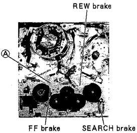
(4) Slowly turn the micrometer's fine-adjusting knob clockwise until the indicator reads "0". The outer ring is usable for this adjustment in a range of ±10 graduations at maximum. Do not turn it further than this range.

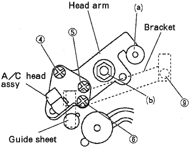
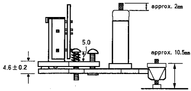
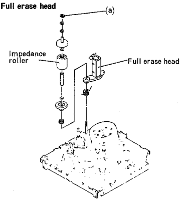
(5) Being very careful not to apply any lateral pressure to the upper drum, turn it gently (with a paper string, for example). At that time, it is a minimum requirement that the pointer shakes in a range of ±1.5 micron.

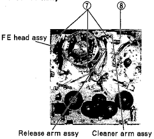
(6) If the pointer shakes more than ±1.5 micron, turn the micrometer's fine-adjusting knob counterclockwise to release the probe from contact. Loosen two screws retaining the upper drum while fine adjusting the setting position of the upper drum, then tighten the screws again.

(7) Again check deflection in the center of the upper drum and adjust the centering until the micrometer's pointer just shakes in a range of ±1.5 micron.

(8) Turn the microchecker's fine-adjusting knob counterclockwise, then remove it.

No.	Item	Adjustment and Check
3	**Head cleaner**  Cleaner Pull up the sponge upwards. Fig. 2-3-5 Removal of Head cleaner	(1) Pull up the cleaner (sponge) a little while taking it out. (2) Replace it with a new cleaner in the reverse order of removing.
4	**Tension band assy**  Ⓐ portion Tension pole assy FF brake ② SP. reel disk Tension band assy Fig. 2-3-6 Removal of Tension band	(1) Remove a screw ② and disengage the tension band from the Ⓐ portion of the tension pole assy. (2) Operate the FF brake while taking out the tension band. (3) Engage a new tension band in the original position. (4) After replacement, check and adjust the tension pole position and back tension (see 2.5.1, page 2-14).
5	**Pinch rollor**  ③ Pinch roller Fig. 2-3-7 Removal of Pinch roller	(1) Remove a screw ③ and detach the pinch roller and its peripheral parts. (2) Install a new pinch roller and fix the collar and the pinch roller cap with the screw.
6	**FF, REW, SEARCH brake assembly**  REW brake Ⓐ FF brake SEARCH brake Fig. 2-3-8 Removal of brakes	(1) — **REW, SEARCH brake** — Lift the REW and SEARCH brake assemblies upwards with nippers or the like while press the locking pawl of them. (2) — **FF brake** — Remove a slit washer Ⓐ and lift the FF brake upwards while taking it out.

No.	Item	Adjustment and Check
7	**A/C head assembly** — **Removal** —  Head arm (a) Bracket ⑤ ④ A/C head assy (b) ⑨ Guide sheet ⑥ Fig. 2-3-9 Removal of A/C head	(1) Disconnect the connector from the A/C head board. (2) Remove a screw ⑨ and release the bracket. (3) Remove a taper nut (a). (4) Remove a nut (b) and take out the A/C head assy with the head arm. (5) Remove three screws ④, ⑤ and ⑥, then remove the A/C head with careful attention to a spring under the screw ⑥ not to lose it. (6) Unsolder the A/C head board and remove it. ***Note: If the guide sheet is removed, make sure to fix the guide sheet tightly, otherwise it may cause tape damage, etc.***
	— **Reinstallation** —  Fig. 2-3-10 Temporarily adjust the height	(1) Reassemble the A/C head and the peripheral parts in the reverse order of removing. (2) Before setting the A/C head on the main deck, temporarily adjust the height of the A/C head as shown in Fig. 2-3-10.
	— **Check and Adjustment** —	(1) Perform the adjustments required after replacement of the A/C head assembly as described in 2.2.4, page 2-5.
8	**Full erase head**  Fig. 2-3-11 Removal of Full erase head	(1) Remove an "E. ring" (a), and detach the impedance roller and its peripheral parts. (2) Disconnect the connector from the FE head. (3) Remove a spring and take out the FE head upwards for replacement. (4) Set a new FE head properly and install the impedance roller and peripheral parts. (5) After replacement, clean the tape transport system (see 2.2.5, page 2-5).

<table>
<tr><th>No.</th><th>Item</th><th>Adjustment and Check</th></tr>
<tr>
<td>9</td>
<td>Drum assembly


⑦
⑧
FE head assy
Release arm assy
Cleaner arm assy

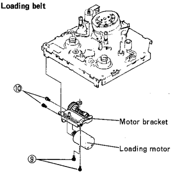
Fig. 2-3-12 Removal of the drum assy</td>
<td>(1) Remove the compoments in the following order.
The cassette panel (see 1.1.1, page 1-1).
The left side cover assembly (see 1.1.2, page 1-1).
The connector box (see 1.1.8, page 1-2).
The PRE/REC board assembly (see 1.2.2, page 1-4).
(2) Remove a screw ⑧ and take out the cleaner arm assembly.
(3) Remove three screws ⑦ and draw out the drum assembly diagonally to the front side trying to avoid the FE head assembly and release arm assembly.
(4) With careful attention to the drum assembly to prevent it from getting damaged, install a new drum motor assembly in the reverse order of disassembly. Tighten screws evenly.
(5) Perform adjustments required after replacement of the drum assembly (see 2.2.3).</td>
</tr>
<tr>
<td>10</td>
<td>Loading motor
Loading belt


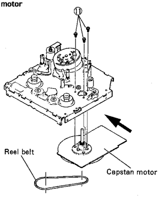
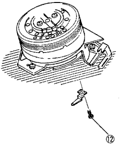
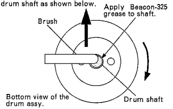
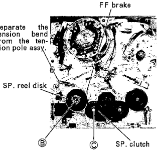
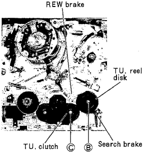
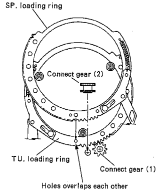
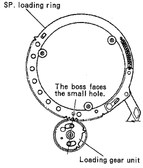
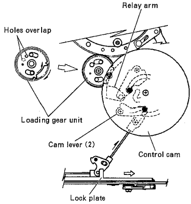
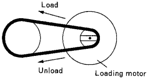
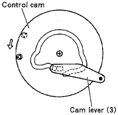
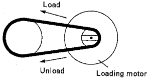
Fig. 2-3-13 Removal of the loading motor and belt</td>
<td>(1) Remove the compoments in the following order.
The right side cover assy (see 1.1.5, page 1-1).
The video board (see 1.2.1, page 1-4).
(2) Disconnect the CN6 from the M.IF board.
(3) Remove two screws ⑨ and take out the motor bracket.
(4) Remove two screws ⑩ and disconnect wires from the loading motor.
(5) Disengage the loading belt and take out the loading motor.
(6) Install a new loading belt and a new loading motor in the reverse order of the removal. When wiring, pay attention to the polarity of wires.
<table>
<tr><th>Poles of motor</th><th>Color of wire</th></tr>
<tr><td>+
(Red marking)</td><td>Red</td></tr>
<tr><td>−</td><td>Gray</td></tr>
</table>
Fig. 2-3-14 Polarity of the loading motor</td>
</tr>
<tr>
<td>11</td>
<td>Capstan motor


Fig. 2-3-15 Removal of the capstan motor</td>
<td><i>Note: Be careful not to damage the capstan shaft.</i>
(1) Remove the compoments in the following order.
The right side cover assy (see 1.1.5, page 1-1).
The video board, the S/S board and the REGULATOR board (see 1.2.1, page 1-4).
The MECHA JUNC board (see 1.2.3 No.(2), page1-4).
(2) Disengage the reel belt from the capstan motor and disconnect the CN2 from the M.IF board.
(3) Remove three screws ⑪ and remove the capstan motor.
(4) When installing the capstan motor, place it in the A/C head side.</td>
</tr>
</table>

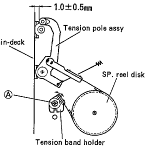
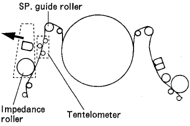
No.	Item	Adjustment and Check
12	**Brush assembly**  Fig. 2-3-16 Removal of the Brush assy	(1) Remove the compoments in the following order. The right side cover assy (see 1.1.5, page 1-1). The video board, the S/S board and the REGULATOR board (see 1.2.1, page 1-4). The MECHA JUNC board (see 1.2.3 No.(2), page1-4). (2) Remove a screw ⑫ and replace the brush. (3) **Apply PGJ04040 (BEACON-325) grease to the drum shaft.** (4) Install the brush assembly so that it comes off the center of the drum shaft as shown below.  Apply Beacon-325 grease to shaft. Brush Bottom view of the drum assy. Drum shaft Fig. 2-3-17 Reinstallation of the Brush assy
13	**SP. clutch** **SP. reel disk**  FF brake Separate the tension band from the tension pole assy. SP. reel disk Ⓑ Ⓒ SP. clutch Fig. 2-3-18 Removal of the SP. clutch and reel disk	(1) Separate the tension band from the tension pole assy. (2) Remove a slit washer Ⓑ while pull out the SP. reel disk upwards as diengaging the FF brake. ***Note:Pay attention to the washer installed underneath the SP. reel disk.*** (3) Remove a slit washer Ⓒ and pull out the SP. clutch upwards paying attention to the washer. (4) Install a new SP. clutch in the reverse order of the removal. (5) Clean the SP. reel shaft with alcohol, apply a drop of oil to SP. reel shaft. (6) Install a new SP. reel disk in the reverse order of the removal. (7) After replacement, check the back tension (see 2.5.1, page 2-14).
14	**TU. clutch** **TU. reel disk**  REW brake TU. reel disk TU. clutch Ⓒ Ⓑ Search brake Fig. 2-3-19 Removal of the TU. clutch and reel disk	(1) Remove a slit washer Ⓑ while pull out the TU. reel disk upwards as diengaging the REW brake and the SEARCH brake. ***Note:Pay attention to the washer installed underneath the TU. reel disk.*** (2) Remove a slit washer Ⓒ and pull out the TU. clutch upwards paying attention to the washer. (3) Install a new TU. clutch in the reverse order of the removal. (4) Clean the TU. reel shaft with alcohol, apply a drop of oil to TU. reel shaft. (5) Install a new TU. reel disk in the reverse order of the removal.

2.4 REASSEMBLING OF MECHANISM

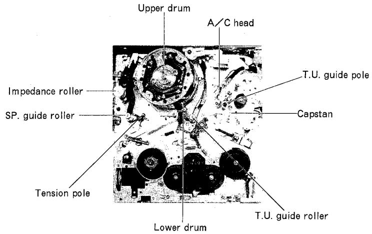
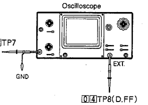
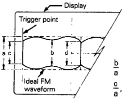
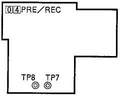
No.	Item	Adjustment and Check
	There is a close relation between the mode sensor and the syscon circuit in the mechanism of this model, and mechanical operations of levers, gears, rollers and others mechanism parts are controlled by the condition of connection between the mode sensor and the control cam. Therefore, if those mechanism parts are incorrectly set, the mechanism may fall into malfunction. When reassembling, make sure to do all parts in the assembly position.	
1	**Loading ring** **Connect gear**  SP. loading ring Connect gear (2) TU. loading ring Connect gear (1) Holes overlaps each other Fig. 2-4-1 Loading ring and connect gear	(1) Mount the TU. loading ring and connect gear (1) normally. (2) Set the SP. loading ring so that the large hole of the SP. loading ring coincide with hole of the TU. loading ring. (3) Keeping these correlative positions, set the connect gear (2) to gear with the loading rings.
2	**Loading gear unit**  SP. loading ring The boss faces the small hole. Loading gear unit Fig. 2-4-2 Installation of loading gear unit	(1) Install the loading gear unit so that the boss of the loading gear unit faces the small hole of the SP. loading ring. ***Note:No gear portion of the loading gear unit is toward right.***

No.	Item	Adjustment and Check
3	**Control cam**  Relay arm Holes overlap Loading gear unit Cam lever (2) Control cam Lock plate Fig. 2-4-3 Installation of control cam	(1) Turn the gears of the loading gear unit in the opposite directions so that the holes overlap each other, then insert a screwdriver etc. into the holes. (2) Shift the lock plate in the arrow direction to lock it. In this condition, the cassette housing lifts up. (3) Turn the cam lever (2) counter-clockwise fully. (4) Move the relay arm to the leftmost limit in the figure. (5) Then install the control cam so that the largest triangle mark of the control cam faces toward the center of the loading gear unit. (6) Turn the loading motor by hand, confirm that the control cam is able to rotate. (7) Take out the screwdriver etc. from the loading gear unit.  Load Unload Loading motor Fig. 2-4-4 Rotational direction of Loading motor
4	**Cam lever (3)**  Control cam Cam lever (3) Fig. 2-4-5 Installatin of cam lever (3)  Load Unload Loading motor Fig. 2-4-6 Rotational direction of Loading motor	(1) Turn the loading motor to loading direction by hand to rotate the control cam counter-clockwise, then set the cam lever (3) correctly as shown in the figure.

2.5 TAPE TENSION ADJUSTMENT

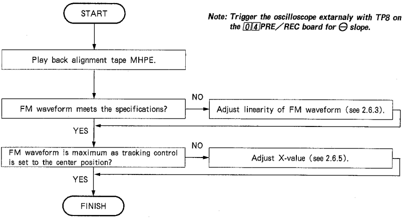
No.	Item	Adjustment and Check
1	**Tension pole position adjustment**  1.0±0.5mm Tension pole assy Main-deck SP. reel disk Ⓐ Tension band holder Fig. 2-5-1 Back tension adjustment	(1) **Required instrument for this adjustment:** •Cassette torque meter (PUJ42881) (2) Turn the power off and cassette tape is ejected, apply black tape or the like to the LED in the center of the deck to shut off infrared rays. (3) Turn on the power and set the mechanism to the Play mode without any cassette tape loaded. Again turn the power off and get the cassette housing to enter the eject state by hand. At that time, no cassette tape is loaded. (4) Loosen the screw Ⓐ a little and adjust the tension band holder in the position so that there is gap (1 mm) between the cutout of the main deck and the tension pole assy. (5) Tighten the screw Ⓐ to fix the tension band holder. (6) Remove the tape applied in the above step (2) and turn on the power.
	— Check the back tension — Back tention 42±4g-cm	(7) Mount a cassette torque meter and set the mechanism to the REC mode. (8) Confirm that the torque meter reads 38~46g-cm as the supply torque. (9) If the torque meter reads otherwise, clean the supply reel disk in the part that contacts the tension band and check the spring of the tension pole assy. (10) If the measurement result is still out of the standard, fine adjust the position of the tension band holder just in a range of ±0.5 mm between the tension pole assy and the cutout portion of the main deck. Again check the back tension. (11) After completing the above adjustment, apply screw sealant to the tension band holder.
	— When use the Tentelometer —  Back tention 24±3g-cm Fig. 2-5-2 Back tension check with Tentelometer	(1) **Required instruments for this adjustment:** •Tentelometer (PGJ04020) (2) Repeat the above steps (2) through (6). (3) Use a tape begin portion of E-180 cassette tape and set to the REC mode. (4) Measure the tension between the impedance roller and the supply guide roller, and make sure of it in the range between 21 and 27 g-cm. (5) If out of the standard, repeat the above steps (9) through (11).
2	**Take-up torgue check** TU torque 60~100g-cm	(1) **Required instruments for this adjustment:** •Cassette torque meter (PUJ42881) (2) Mount a cassette torque meter and set the mechanism to the REC mode. (3) Confirm that the torque meter reads 60~100 g-cm as the take-up torque.

2.6 INTERCHANGEABILITY ADJUSTMENT

No.	Item	Adjustment and Check
	Interchangeability must be adjusted after replacement of the upper drum assembly, drum assembly and A/C head assembly, etc.	
1	**Names of main parts**  Upper drum A/C head T.U. guide pole Impedance roller SP. guide roller Capstan Tension pole T.U. guide roller Lower drum Fig. 2-6-1 Names of main parts	
2	**FM waveform check**  Oscilloscope 04TP7 GND EXT. 04TP8(D.FF) Fig. 2-6-2 Connection of Oscilloscope  Display Trigger point a c b d Ideal FM waveform $\frac{b}{a} \geqq 0.9$ $\frac{c}{a}, \frac{d}{a} \geqq 0.8$ Fig. 2-6-3 FM waveform check	***Note: Before loading any alignment tape, make sure to confirm nothing wrong in tape transport with an ordinary tape.*** (1) For observing FM waveform, connect an oscilloscope with TP7 on 04PRE/REC board while connecting the other probe with TP8 on 04PRE/REC board for triggering it externally with ⊖ slope. (2) Play back the alignment tape MHPE while turning the tracking control to maximize FM waveform. Referring to Fig. 2-6-3, check whether rate of each level to the maximum level "a" is as specified or not. (3) When the maximum level "a" is set for 4 scale divisions on the oscilloscope screen, "b" must be more than 3.6 scale divisions while "c" and "d" must be more than 3.2 scale divisions. ***Note: To set the maximum level "a" for 4 scale divisions, adjust the gain control of the oscilloscope in addition to the tracking control that is set to maximum position.*** — Location of TPs —  04PRE/REC TP8 TP7

No.	Item	Adjustment and Check

Note: Trigger the oscilloscope externaly with TP8 on the [0][4]PRE/REC board for ⊖ slope.


START
Play back alignment tape MHPE.
FM waveform meets the specifications?
NO
Adjust linearity of FM waveform (see 2.6.3).
YES
FM waveform is maximum as tracking control is set to the center position?
NO
Adjust X-value (see 2.6.5).
YES
FINISH

3 **Interchangeability adjustment**

— Linearity adjustment —

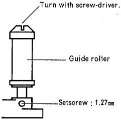
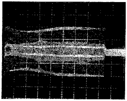

Turn with screw-driver.
Guide roller
Setscrew : 1.27mm

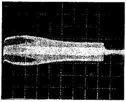
Fig. 2-6-4 Names of Pole base



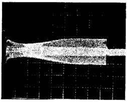
Tracking center

(1) **Precautions for adjustment:**

- For interchangeability adjustment, play back the alignment tape MHPE.
- If FM dropout cannot be corrected by adjusting the guide roller, it needs to replace the drum assembly. This replacement should apply only to the case that waveforms of CH-1 and CH-2 have the same tendency.
- The following pictures show FM waveforms when the lower drum is worn.
- Required tool:
  Hex. key (1.27 mm)



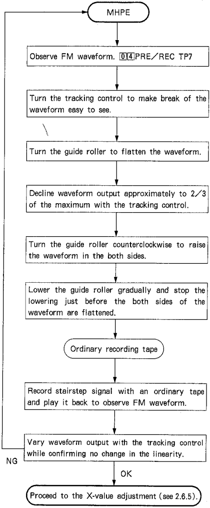
Tracking (−)



Tracking (+)

No.	Item	Adjustment and Check

Note: Trigger the oscilloscope extarnaly with TP8 on the 04PRE/REC board for ⊖ slope.



Observe FM waveform. 04PRE/REC TP7

Turn the tracking control to make break of the waveform easy to see.

Turn the guide roller to flatten the waveform.

Decline waveform output approximately to 2/3 of the maximum with the tracking control.

Turn the guide roller counterclockwise to raise the waveform in the both sides.

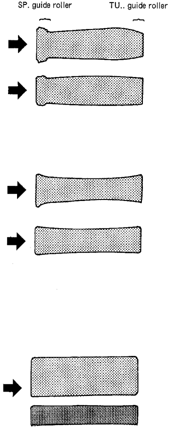
Lower the guide roller gradually and stop the lowering just before the both sides of the waveform are flattened.

Ordinary recording tape

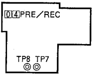
Record stairstep signal with an ordinary tape and play it back to observe FM waveform.

Vary waveform output with the tracking control while confirming no change in the linearity.

Proceed to the X-value adjustment (see 2.6.5).



— Location of TPs —



No.	Item	Adjustment and Check

4 A/C head adjustment

If the A/C head is improperly positioned, it results in dropdown of output level or poor S/N ratio in playback audio signal, moreover, misaligned servo without picking-up of control signal at the worst.

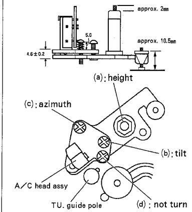

approx. 2mm
5.0
approx. 10.5mm
4.6±0.2
(a): height
(c): azimuth
(b): tilt
A/C head assy
TU. guide pole
(d) : not turn

Fig. 2-6-5

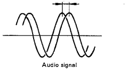

No phase difference (less than 0.1msec).
Audio signal

Fig. 2-6-6

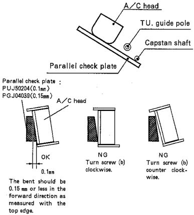

A/C head
TU. guide pole
Capstan shaft
Parallel check plate
Parallel check plate :
PUJ50204(0.1mm)
PGJ04039(0.15mm)
A/C head
OK
0.1mm
The bent should be 0.15 mm or less in the forward direction as measured with the top edge.
NG
Turn screw (b) clockwise.
NG
Turn screw (b) counter clockwise.

Fig. 2-6-7 Parallel check of A/C head

(1) **Required implements:**
- Alignment tape : MBAE-3, MHPE
- Parallel check plate : PUJ50204(0.1), PGJ04039(0.15)

(2) **Rough check of A/C head height before adjustment**

① In the stage of tape transport check before height adjustment, temporarily adjust the height of the A/C head in order to prevent alignment tape from damage as well as to perform adjustment with ease.

(3) **Tilt (forward bent) adjustment**

① Adjust the screw (b) with the parallel check plate (PUJ50204) so that tilt of the A/C head is 0.1mm. (See Fig. 2-6-7.) If there is a gap above the A/C head (this is interpreted as a little tilt), tighten the screw (b) to increase the tilt of the A/C head.
On the other hand, if there is a gap underneath the A/C head, loosen the screw (b) to decrease the tilt.

② Confirm that tape is neither damaged nor wrinkled around the lower flange of the take-up guide pole. If tape is wrinkled, fine adjust the height of the take-up guide pole (see 2.7.3, page 2-20).

(4) **Height and azimuth adjustments**

① Connect an oscilloscope's CH-1 with AUDIO OUT CH-1(L ch) while connecting CH-2 with AUDIO OUT CH-2(R ch), and set it to the chop mode.

② Set the AUDIO OUT switch positioned side panel to "NORM" position.

③ Play back the alignment tape MBAE-3 while adjusting the A/C head height with the hex. nut (a) to minimize both output levels of CH-1 and CH-2. (**Height adjustment**)

④ Play back the alignment tape MHPE while adjusting the screw (c) so that CH-1 and CH-2 output waveforms accord with each other in the phase and their outputs become maximum. (**Azimuth adjustment**)

⑤ Repeat the above steps No.③ and No.④ alternately for more precise adjustment.

(5) **A/C head parallel check**

① Confirm that tilt of the A/C head is less than 0.15mm with the parallel check plate (PGJ04039).

② If it is out of the specifications, repeat the above steps (3) and (4).

(6) After completing the above adjustment, apply screw sealant to the screws (b), (c), (d) and a nut (a).

No.	Item	Adjustment and Check
5	**X-value adjustment**	

If X-value is adjusted improperly, it results in time lag between picture and normal sound in playback of a tape that is recorded with a set whose X-value is correctly adjusted.

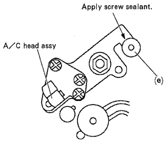


Fig. 2-6-8

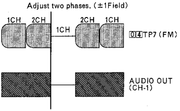


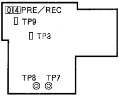
Fig. 2-6-9

• Manner of external synchronization:

① Set the oscilloscope's time sweep to 10 msec.

② In the condition that the oscilloscope is synchronized with D. FF signal, turn the oscilloscope's HOLD OFF control in the direction of (+) to stabilize non-recorded portion.

— Location of TPs —



(1) **Required implements:**
- •Taper nut driver : PUJ50637
- •Alignment tapes : MBPE-X, MH-F8

(2) **Preparation**

① Connect CH-1 of the oscilloscope with TP7 on 04 PRE/REC board while connecting CH-2 with AUDIO OUT CH-1.

② Trigger the oscilloscope externally with signal from TP8 on 04PRE/REC board (D. FF).

③ Set the tracking to center position.

(3) Play back the alignment tape MBPE-X.

(4) Adjust the taper nut (e) with the taper nut driver to maximize FM output and to accord phases of audio and FM signals with each other in their no-recorded portions.

(5) Connect CH-1 of the oscilloscope with TP3 on 04 PRE/REC board.

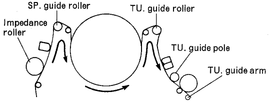
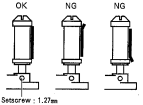
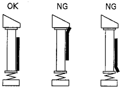
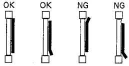
(6) Trigger the oscilloscope externally with signal from TP9 on 04PRE/REC board (A. FF).

(7) Play back the alignment tape MH-F8 and adjust the taper nut (e) so that the FM waveform is maximum at a point the nearest position of the above step (4) with the tracking control set at the center.

(8) After completing the above adjustment, apply screw sealant to the nut (e).

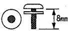
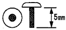
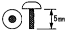
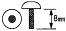
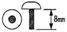
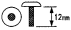
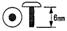
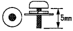
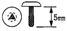
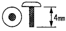
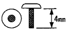
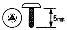
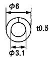
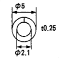
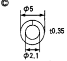
2.7 ADJUSTMENT OF TAPE TRANSPORT SYSTEM

Note: The tape transport system has been precisely adjusted at the factory before shipment. Check and adjustment are required only after the parts of the tape transport system are replaced.

No.	Item	Adjustment and Check
1	**Location of parts**  SP. guide roller TU. guide roller Impedance roller TU. guide pole TU. guide arm Fig. 2-7-1 Names of Tape guides	
2	**SP. guide rolloer** **TU. guide rolloer**  Fig. 2-7-2 Height adjustment of SP. & TU. guide roller	(1) **Required tool :** • Hexagon head key (1.27 mm) (2) Slightly loosen the setscrew under the guide roller. (3) Play an ordinary thin tape (more than E-240 tape). (4) Adjust the height of the guide roller temporarily so that the tape smoothly runs. (5) Tighten the setscrew. (6) After the temporary adjustment, check the FM waveform.
3	**TU. guide pole**  Fig. 2-7-3 Height adjustment of TU. guide pole	(1) Play an ordinary thin tape (more than E-240 tape). (2) Adjust the height of the take-up guide pole so that the tape smoothly runs on the lower flange of the take-up guide pole. (Lower edge alignment) (3) Check that the tape is not damaged at near the take-up guide pole and the guide arm in the following modes several times respectively. PLAY→S.REV→S.FWD→STILL→PLAY (4) When there is any result unsatisfactory in the above step (3), turn the take-up guide pole within a quarter round to lower the height and repeat the check mentioned in the above step (3). (5) This adjustment result must be checked again after the A/C head adjustment (see 2.6.4) is completed. (6) After the adjustment, apply screw sealant to the screw.
4	**TU. guide arm**  Fig. 2-7-4 Height adjustment of TU. guide arm	(1) **Required tool :** • Hexagon head key (0.9 mm) (2) Set to S.REV mode an ordinary thin tape (more than E-240 tape). (3) Adjust the height of the TU. guide arm with set screw so that the tape is not damaged at upper frange of the TU. guide arm. (Upper edge alignment) (4) After the adjustment, apply screw sealant to the set screw.

2.8 TABLE OF SCREWS AND SLIT WASHERS USED IN THIS SET

Note: The numbers of screws and slit washers shown below respectively accord with numbers of them appearing in this section.

① (gold)  PDM4165A (M3)	② (gold)  SDSP2605Z	③ (silver)  SPSP2005Z	④ (black)  PQ43687B (M2.6)	⑤ (gold)  PQ44621 (M2.6)
⑥ (gold)  SDSP2612Z	⑦ (gold)  SDSP2606Z	⑧ (gold)  DPSP2005Z	⑨ (gold)  SDST2605Z	⑩ (gold)  SDSP2004Z
⑪ (gold)  SDSP2604Z	⑫ (gold)  SDST2005Z			
Ⓐ  PQM30017-24 (red)	Ⓑ  PQM30017-26 (red)	Ⓒ  PQM30017-2 (black)		

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 PRECAUTIONS

(1) Before proceeding to any electrical adjustment, it is the firstprerequisite to confirm that the objective item is out of order or of breakdown.
Moreover, for parts and items that need correct mechanical adjustment prior to electrical adjustment, begin by confirming that they are exactly mechanically adjusted.

(2) Make sure to start electrical adjustment 5 or more minutes after the power is turned on.

3.1.1 Required tools and test instruments

Besides the special implements shown in Fig. 3-1-1, the following test instruments are necessary for electrical adjustment.

- Frequency counter (10MHz or more and 100mV or less in the sensitivity)
- Video signal generator (TG-7/2, Model 1411, or equivalent)
- Digital voltmeter (available for $1mV_{DC}$ or under)
- Sweep signal generator (100kHz to 10MHz, or equivalent)
- Oscilloscope (dual-trace type, for more than 50MHz)
- TV monitor
- Vectorscope (521A or equivalent)
- Audio tester
- Extension board for S/S and REGULATOR board (PGJ05046 Unnecessary for adjustments)

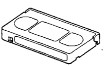
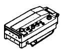
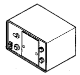
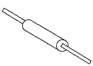
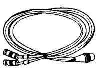
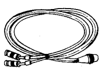
Alignment tapes MHPE, MHVE-2H, MHVE-2, MBAE, MH-8, MH-F8	Camera adapter SA-S41E or PGS20167G	Carrier checker PGJ05008-2
	Use the camera adapter when siganl is input. 	
Adjusting driver YTU93004-2	7-pin output conversion cable PGJ05018	7-pin input conversion cable PGJ05028
	 7-pin(male)→BNC×2	 BNC×2→7-pin(female)

Fig. 3-1-1 Required special implements

3.1.2 Speciffication of alignment tapes

·MHPE

Video signal	Audio signal	Application	Remark
VHS SP mode Stairstep	6kHz	·For check adjustment of interchangeability ·For adjustment of PB swiching point	MH-2 stairstep signal substitutable.

·MHVE-2

Video signal	Audio signal	Application	Remark
VHS SP mode Color bar	–	·For check and adjustment of video PB circuit	MH-2 color bar signal is substitutable.

·MHVE-2H

Video signal	Audio signal	Application	Remark
S-VHS SP mode Color bar	–	·For check and adjustment of video PB circuit	MH-2H color bar signal is substitutable.

·MBAE

Video signal	Audio signal	Application	Remark
CTL signal only	1kHz(0dB)	·For check and adjustment of audio PB circuit	MH-2 1kHz signal is substitutable.

·MH-8

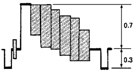
No.	PB time	Video signal	Audio signal	Application
1	2 minutes	Color sweep	400Hz(−10dB)	· Check and adjustment of video signal's frequency response in PB circuit. · Check and adjustment of audio signal's frequency response in PB circuit.
2	2 minutes	Color sweep	100Hz(−10dB)	
3	2 minutes	Color sweep	8kHz(−10dB)	
4	4 minutes	Color sweep	–	

·MH-F8

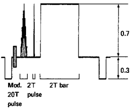
No.	PB time	Video signal	Audio signal	Application
1	5 minutes	–	Carrier only	Check and adjustment of interchangeability of mechanism.
2	5 minutes	Stairstep	Carrier only	Check and adjustment of interchangeability of mechanism.
3	5 minutes	–	1kHz (±50kHz DEV)	Check and adjustment of FM audio PB circuit.

3.1.3 Signals required for video system adjustment

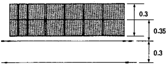
(1) EBU 75% color bar



(2) Pulse and bar signal

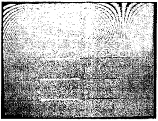

0.7
0.3
Mod. 20T pulse
2T pulse
2T bar

(3) Video sweep signal (100kHz to 5MHz)

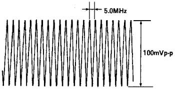


To supply this signal through the **LINE IN** terminal, make sure to use a sweep signal having a good characteristic in the H correlation in order to avoid erroneous operation of comb filters.

For a reference, a signal having a good H correlation shows such a clear pattern as neighboring black and white lines are the same in the width and the interval on the monitor as shown in the figure below.

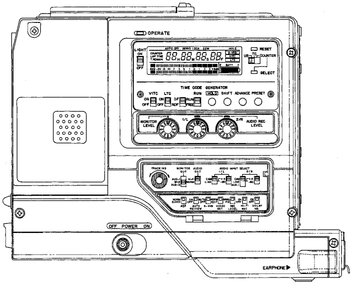


(4) Sine wave (5.0MHz)


5.0MHz
100mVp-p

Unit (Vp-p)

3.1.4 Initial setting of switches


OPERATE
LIGHT
ON
OFF
AUTO OFF
SERVO LOCK
DEW
HOLD
COUNTER
LAP TIME
T.REMAIN
S-VHS
VITC
LTC
BATT
RESET
UB
TC
COUNTER
SELECT
TIME CODE GENERATOR
VITC
LTC
RUN
HOLD
SHIFT
ADVANCE
PRESET
DF
NDF
FREE
MONITOR LEVEL
1/L
2/R
AUDIO REC LEVEL
TRACKING
MONITOR OUT
AUDIO OUT
AUDIO INPUT SELECT
AUD-1
MIX
AUD-2
HI-FI
NORM
CAM
LINE
+4
-60
NORM
QUICK
AEF
AUTO REVIEW
S-VHS
VIDEO OUT
REC LEVEL
HI-FI REC
DOLBY NR
EDIT
MANU
FIX
OFF POWER ON
EARPHONE

- Unless otherwise specified, check and adjustment should be done with the following switch setting.

VIDEO OUT SELECT switch : VTR
TALLY switch (Operation panel) : ON

[Internal switches of P.C. boards]

Refer to the subsection 1.2 "Internal switches".

AUDIO board SW21 : OFF
SW22 : OFF
SW23 : ON
VIDEO board SW1 : OFF
AUTO EQ board SW1-1 : ON
SW1-2 : ON
SW1-3 : ON
SW1-4 : OFF
SW1-5 : OFF (not used)
SW1-6 : OFF (not used)

[Switches on the side cover]

LIGHT switch : ON
COUNTER switch : COUNTER
VITC switch : OFF
LTC switch : OFF
DF-NDF : DF
RUN switch : RUN

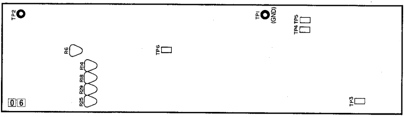
MONITOR OUT switch : MIX
AUDIO OUT switch : HiFi
AUDIO INPUT SELECT switch
1/L : CAM
: +4
2/R : CAM
: +4
AEF switch : NORM
AUTO REVIEW switch : OFF
S-VHS switch : AUTO
VIDEO OUT switch : NORM
REC LEVEL switch : MANU
HiFi REC switch : ON
DOLBY NR switch : OFF

Notes:

- When switch setting is changed from the original position according to direction for an item, make sure to reset it to the initial position every time the adjustment of the item is completed.
- Check and adjustment should be performed at least 5 minutes after the power switch was turned on.
- For recording and playing back a tape for check and adjustment, use a double-coated tape.

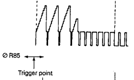
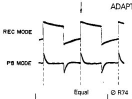
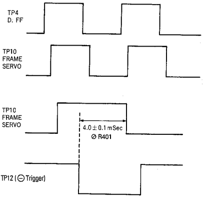
3.2 REGULATOR CIRCUIT

— Location of TP & VR —



No.	Item	Check Point	Adjustment Parts	Signal	Mode	Check and Adjustment
1	Regulated voltage	TP6 [0][6] 100.0 ± 3 kHz	R14 [0][6] ⊘ R14	Color bar ↓ (CAMERA ADAPTER)	REC	1) Connect a frequency counter to TP6. 2) Adjust R14 so that the frequency counter reads 100.0 ± 3.0 kHz.
		TP3 [0][6] 9.10 ± 0.05 VDC	R25 [0][6] ⊘ R25	Color bar ↓ (CAMERA ADAPTER)	REC	1) Connect a digital voltmeter to TP3. 2) Adjust R25 so that the voltmeter reads 9.10 ± 0.05 V.
		TP4 [0][6] 5.25 ± 0.05 VDC	R29 [0][6] ⊘ R29	Color bar ↓ (CAMERA ADAPTER)	REC	1) Connect a digital voltmeter to TP4. 2) Adjust R29 so that the voltmeter reads 5.25 ± 0.05 V.
		TP5 [0][6] 5.25 ± 0.05 VDC	R18 [0][6] ⊘ R18	Color bar ↓ (CAMERA ADAPTER)	REC.	1) Connect a digital voltmeter to TP5. 2) Adjust R18 so that the voltmeter reads 5.25 ± 0.05 V.
		TP2 [0][6] 9.10 ± 0.05 VDC	R6 [0][6] ⊘ R6	—	STOP	1) Connect a digital voltmeter to TP2. 2) Adjust R6 so that the voltmeter reads 9.10 ± 0.05 V.
2	Battery voltage detection	—	R110 [0][5]	Color bar ↓ (CAMERA ADAPTER)	REC	1) Adjust DC source voltage so that it is 10.95 ± 0.02 V at the DC IN terminal of the VTR section. 2) Adjust R110 so that the set enters the BATT. WARNING mode (REC TALLY LED blinks). 3) Raise the input voltage to the DC IN terminal to the normal rate (REC TALLY LED lights). 4) Decline the DC input voltage gradually while confirming that the set enters the BATT. WARNING mode with the voltage of 10.95 ± 0.05 V. *Note: In the case the set enters the WARNING mode at setting of the source voltage, adjust the input voltage to the normal range by turning R110.*

3.3 SERVO CIRCUIT

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Check and Adjustment
1	PB SW point	VIDEO OUT 05 TP4 05 (Ext. trigger) 	R85 05	MHPE	PB	1) Connect an oscilloscope's probe to the VIDEO OUT terminal while connect the other probe to TP4 for external trigger. (Sweep time/div. range: 5.0 µ, (−) slope) 2) Play the alignment tape MHPE while adjusting the TRACKING control to maximize the FM waveform. 3) Adjust R85 so that the switching point is set 6.5 H before V. sync. 4) Set the oscilloscope for observing on the (+) slope while confirming that a time lag in the switching point is less than 1.0 H.
2	Tracking preset	TP11 05 TP4 05 (Ext. trigger) 	R74 05	Stairstep ↓ Y/C 443 IN (CAMERA ADAPTER)	REC ↓ PB	1) Check the TRACKING control set to the center click position. 2) Connect the oscilloscope's probe to TP11 and the set the VTR to the REC mode. 3) Adjust the oscilloscope's X (horizontal) axis to position the rise point of the CTL pulse on an optional Y axis. 4) Set the VTR to the PB mode and adjust R74 so that the rise point of the CTL pulse observed at TP11 matches with the Y axis determined in the above step 3).
3	Frame servo	TP4 05 TP10 05 TP12 05 	R401 05	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC	1) Supply the color bar signal to the Y/C IN terminal of the camera adapter. 2) Conenct the oscilloscope's probes to TP4 and TP10. 3) Set the VTR to the REC mode and confirm that FRAME pulse and D. FF pulse are locked. 4) Change the probe connection from TP4 to TP12. 5) Adjust R401 so that the period from the fall of TP12's signal to the fall of TP10's signal is 4.0 ± 0.1 msec.

3.4 AUDIO CIRCUIT

Notes:
- ***For adjustments that are specified to perform in the REC mode, input the color bar signal.***
- ***When an adapter is used for input of audio signal, input –6 dBs signal.***
- ***When audio signal is directly input through the 50-pin connector, input –20 dBs signal.***
- ***When audio signal is input through the LINE IN connector, input +4 dBs signal.***

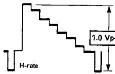
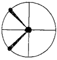
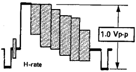
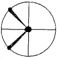
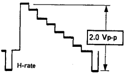
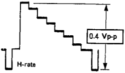
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Check and Adjustment
1	Audio level meter	LEVEL INDICATOR	R152 $\boxed{0}\boxed{7}$ (L) R154 $\boxed{0}\boxed{7}$ (R)	1 kHz, –6 dBs ↓ (CAMERA ADAPTER)	EE	1) Connect the CAMERA adapter assembly (SA-S41E, PGS20167G) to the camera section. 2) Supply 1 kHz, –6 dBs signal to the AUDIO IN terminal of the adapter. HiFi REC : ON NR : OFF AUDIO OUT : HiFi 3) Adjust the AUDIO REC LEVEL VR so that output level at the AUDIO OUT terminal is -6 dBs. *Note: Do not disturb the above setting of the AUDIO REC LEVEL VR until the adjustment of this item is completed.* 4) Adjust R152 and R154 so that the audio level meter indicates 0 dB. In concrete, adjust the VRs to turn on the indicator LEDs one after another from the utmost minus side and fix them when the LED to indicate 0 dB turns on.
2	Normal audio EE level EE level	AUDIO OUT (with non-load termination) –6.0 dBs	R277 $\boxed{0}\boxed{7}$ (L) R307 $\boxed{0}\boxed{7}$ (R) ⊘ R277 (CH-1) ⊘ R307 (CH-2)	1 kHz, –6 dBs ↓ (CAMERA ADAPTER)	EE	1) Connect the CAMERA adapter assembly (SA-S41E, PGS20167G) to the camera section. 2) Supply 1 kHz, –6 dBs signal to the AUDIO IN terminal of the adapter. HiFi REC : ON NR : OFF AUDIO OUT : NORM 3) Connect an audio tester to the AUDIO OUT terminal. Adjust R277 and R307 to obtain –6.0 dBs as output level.
3	Alarm level Alarm level	TP5 $\boxed{0}\boxed{7}$ –50 dBs	R120 $\boxed{0}\boxed{7}$ ⊘ R120	—	EE	1) Connect the audio tester to TP5. HiFi REC : ON NR : OFF AUDIO OUT : HiFi 2) Forward the tape until it reaches the tape end in the FF mode. 3) Activate the alarm at the tape end while adjusting R120 to set alarm level to –50 dBs.

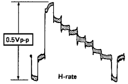
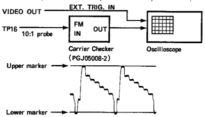
No.	Item	Check Point	Adjustment Parts	Signal	Mode	Check and Adjustment
4	Normal audio PB level	AUDIO OUT (with non-load termination)	R271 $\boxed{0}\boxed{7}$ (L) R301 $\boxed{0}\boxed{7}$ (R)	MBAE	PB	1) Connect the audio tester to the AUDIO OUT terminal. HiFi REC : ON NR : OFF AUDIO OUT : NORM 2) Play the alignment tape MBAE. 3) Adjust R271 and R301 to obtain -9.0 dBs as the output level on the both channels.
	PB level	-9.0 dBs	⊘ R271 (CH-1) ⊘ R301 (CH-2)			
5	Normal audio PB frequency response	AUDIO OUT (with non-load termination)	R265 $\boxed{0}\boxed{7}$ (L) R295 $\boxed{0}\boxed{7}$ (R)	MH-8 400 Hz, 8 kHz	PB	1) Connect the audio tester to the AUDIO OUT terminal. HiFi REC : ON NR : OFF AUDIO OUT : NORM 2) Play the alignment tape MH-8. 3) Adjust R265 and R295 so that the 8 kHz signal level is 0 dB compared with the 400 Hz signal level. *Note: Through the above adjustment, set the MONITOR LEVEL VR to the minimum position.*
		400 Hz	8 kHz			
		0 dB (Reference)	0 dB			
6	Normal audio REC level	AUDIO OUT (with non-load termination)	R254 $\boxed{0}\boxed{7}$ (L) R284 $\boxed{0}\boxed{7}$ (R)	1 kHz, -6 dBs ↓ (CAMERA ADAPTER)	REC $\boxed{\text{VHS}}$ ↓ PB	1) Supply 1 kHz, -6 dBs signal to the AUDIO IN terminal of the adapter. HiFi REC : ON NR : OFF AUDIO OUT : NORM 2) Connect the audio tester to the AUDIO OUT terminal. 3) Record the 1 kHz, -6 dBs signal and play it back in the VHS mode. 4) Adjust R254 and R284 to obtain -6.0 dBs as the output level on the both channels. *Note: There is a slight difference in the sensitivity owing to tape used.*
	REC level	-6.0 dBs	⊘ R254 (CH-1) ⊘ R284 (CH-2)			

No.	Item	Check Point	Adjustment Parts	Signal	Mode	Check and Adjustment
7	Normal audio REC/PB frequency response	AUDIO OUT (with non-load termination)	S-VHS R332 0 7 (L) R333 0 7 (R)	1 kHz, −26 dBs ↓ 10 kHz, −26 dBs ↓ (CAMERA ADAPTER)	REC S-VHS ↓ PB	1) Supply 1 kHz, −26 dBs signal to the AUDIO IN terminal of the adapter. HiFi REC : ON NR : ON AUDIO OUT : NORM 2) Connect the audio tester to the AUDIO OUT terminal. 3) Record the signal and play it back both in the S-VHS mode. 4) Adjust R332 and R333 so that the 10 kHz signal level is 0 ± 1.0 dB compared with the 1 kHz signal level.
		1 kHz		10 kHz		
		0 dB (Reference)		0 ± 1.0 dB		
			VHS R334 0 7 (L) R335 0 7 (R)		REC VHS ↓ PB	5) Record the signal and play it back both in the VHS mode. 6) Adjust R334 and R335 so that the 10 kHz signal level is 0 ± 1.0 dB compared with the 1 kHz signal level. *Note: Through the above adjustment, set the MONITOR LEVEL VR to the minimum position.*
		1 kHz		10 kHz		
		0 dB (Reference)		0 ± 1.0 dB		
8	FM audio carrier frequency	TP25 0 7 TP24 0 7	R237 0 7 (1.4 MHz) R211 0 7 (1.8 MHz)	—	REC VHS	1) Connect the frequency counter to TP25. 2) Operate recording in the VHS mode. HiFi REC : ON NR : OFF AUDIO OUT : HiFi 3) Adjust R237 to obtain 1.400 ± 0.005 MHz as the carrier frequency. 4) Connect the frequency counter to TP24. 5) Adjust R211 to obtain 1.800 ± 0.005 MHz as the carrier frequency.
	FMA carrier freguency	1.400 ± 0.005 MHz		⊘ R237		
		1.800 ± 0.005 MHz		⊘ R211		
9	FM audio PB level	AUDIO OUT (with non-load termination)	R230 0 7 (L) R205 0 7 (R)	MH-F8	PB	1) Connect the audio tester to the AUDIO OUT terminal. HiFi REC : ON NR : OFF AUDIO OUT : HiFi 2) Play the alignment tape MH-F8. 3) Adjust R230 and R205 to obtain −6.0 dBs as the signal level on the both channels.
	FMA PB level	−6.0 dBs	⊘R230 (L ch) ⊘R205 (R ch)			

3.5 VIDEO CERCUIT

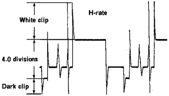
Note: Connect the camera adapter (SA-S41E, PGS20167G) to the camera section.

No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
1	**Y/C EE output level**	Y OUT C OUT (75Ω terminator) 	R61$\boxed{0}\boxed{1}$(Y) R135$\boxed{0}\boxed{1}$(C)	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER) 	EE	(1) Connect the oscilloscope to the Y OUT with 75Ω terminator. (2) Adjust R61 to obtain 1.0Vp-p as Y level. (3) Supply EBU color bar signal directly to the vectorscope while adjusting the GAIN VR so that the burst level crosses the scope's circumference. (4) Connect the vectorscope to the C OUT while adjusting R135 so that the burst level is the same as in the step (3).
2	**VIDEO EE output level**	VIDEO OUT (75Ω terminator) 	R66$\boxed{0}\boxed{1}$(Y) R134$\boxed{0}\boxed{1}$(C)	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER) 	EE	(1) Connect the oscilloscope to the VIDEO OUT with 75Ω terminator. (2) Adjust R66 to obtain 1.0Vp-p as Y level. (3) Supply EBU color bar signal directly to the vectorscope while adjusting the GAIN VR so that the burst level crosses the scope's circumference. (4) Connect the vectorscope to the VIDEO OUT while adjusting R134 so that the burst level is the same as in the step (3).
3	**AGC**	TP5$\boxed{0}\boxed{1}$ 	R371$\boxed{0}\boxed{1}$	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	EE	(1) Connect the oscilloscope to TP5. (2) Adjust R371 so that the signal level is 2.0Vp-p.
4	**REC process input level**	TP6$\boxed{0}\boxed{1}$ 	R293$\boxed{0}\boxed{1}$	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{S-VHS}}$	(1) Connect the oscilloscope to TP6. (2) Perform recording in the S-VHS mode. (3) Adjust R293 so that the signal level is 0.4Vp-p.

No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
5	**REC process output level**  	TP8 01	R296 01	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC S-VHS	(1) Connect the oscilloscope to TP8. (2) Perform recording in the S-VHS mode. (3) Adjust R296 so that the signal level is 0.5Vp-p.
6	**Carrier & deviation**  VIDEO OUT EXT. TRIG. IN TP16 10:1 probe FM IN OUT Carrier Checker (PGJ05008-2) Oscilloscope Upper marker Lower marker	TP16 01	R349 01 (CARRI) R350 01 (DEVI)	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC S-VHS	*Note: This adjustment needs the carrier checker (PGJ05008-2).* (1) Connect the carrier checker and an oscilloscope as shown in the figure. (2) Set the carrier checker for S-VHS mode and set the DEVI/BAL switch to the "DEVI" position. (3) Perform recording in the S-VHS mode. (4) Align the sync tip with the lower marker with R349, while align the 100% white with the upper marker with R350. *Note: Confirm that both the sync-tip and the 100% white are aligned with the markers respectively.*
			R347 01 (CARRI) R348 01 (DEVI)		REC VHS	(5) Perform recording in the VHS mode. (6) In the same manner as the above step (4), use R347 and R348 to align the sync tip and the 100% white with the lower and upper markers respectively.

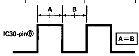
MODE	CARRIER		DEVIATION
	SYNC TIP	100%WHITE	
S-VHS	5.4MHz ⊘R349	7.0MHz ⊘R350	1.6MHz
VHS	3.8MHz ⊘R347	4.8MHz ⊘R348	1.0MHz

No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
7	**White & Dark clip**	TP15$\boxed{0}\boxed{1}$	R358$\boxed{0}\boxed{1}$ (White clip) R362$\boxed{0}\boxed{1}$ (Dark clip)	Pulse & bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{S-VHS}}$	(1) Perform recording in the S-VHS mode. (2) Adjust the oscilloscope's GAIN VR to set the portion between the sync tip and the 100% white for 4.0 scale divisions on the scope. (3) In the above condition, adjust R358 so that the white clip is 4.4 scale divisions (210%) while adjust R362 so that the dark clip is 2.4 scale divisions. (60%)

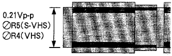


MODE	White clip	Dark clip	Sync tip − 100%White
S-VHS	4.4 divisions ∅R358	2.4 divisions ∅R362	4.0 divisions
VHS	3.6 divisions ∅R359	1.8 divisions ∅R361	4.0 divisions

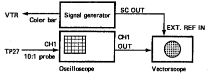
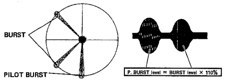
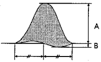
No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
			R359$\boxed{0}\boxed{1}$ (White clip) R361$\boxed{0}\boxed{1}$ (Dark clip)		REC $\boxed{\text{VHS}}$	(4) Perform recording in the VHS mode. (5) In the same manner as the above steps (2) and (3), adjust the white clip to be 3.6 scale divisions (190%) with R359 and the dark clip to be 1.8 scale divisions (45%) with R361.
8	**S-VHS mode detection**	IC30-pin⑥ $\boxed{0}\boxed{1}$	R600$\boxed{0}\boxed{1}$	Sine wave (5.0MHz) ↓ TP29$\boxed{0}\boxed{1}$	PB	(1) Make shortcircuits between TP30 and TP31 on the video board. (2) Supply 5.0MHz/100mVp-p sine wave to TP29. (3) Use a blank tape (not yet used), set to the play mode. (4) Adjust R600 so that the duty factor is fifty-fifty (A=B in the figure).

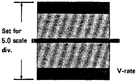
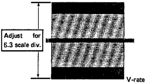
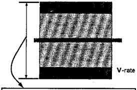


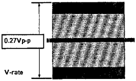
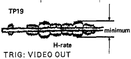
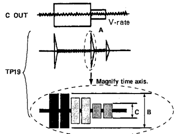
No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
9	**REC FM level**	TP1$\boxed{0}\boxed{2}$	R5$\boxed{0}\boxed{2}$	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{S-VHS}}$	(1) Perform recording in the S-VHS mode. (2) Adjust R5 so that the pedestal level is 210mVp-p.
			R4$\boxed{0}\boxed{2}$		REC $\boxed{\text{VHS}}$	(3) Perform recording in the VHS mode. (4) Adjust R4 so that the pedestal level is 210mVp-p.

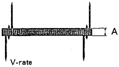
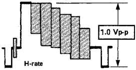
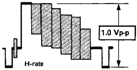


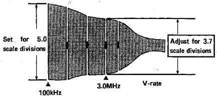
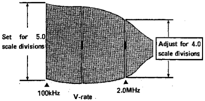
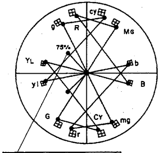
TRIG: $\boxed{1}\boxed{1}$ PRE/REC JUNC TP3 (D-FF)

No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
10	**4.43VCXO**	TP25$\boxed{0}\boxed{1}$ **TP25 : 4.433619MHz ± 50Hz**	C268$\boxed{0}\boxed{1}$	MHVE-2H	PB	(1) Make shortcircuits between TP24 and TP-GND on the video board. (2) Play back the alignment tape MHVE-2H. (3) Adjust C268 so that the frequency counter reads 4.433619 MHz ± 50Hz.
11	**VCO**	C264$\boxed{0}\boxed{1}$ (upper side) **C264 (upper side) : 3.20V_{DC}**	C255$\boxed{0}\boxed{1}$	MHVE-2H	PB	(1) Connect the digital voltmeter to upper side of C264. (2) Play back the alignment tape MHVE-2H. (3) Adjust C255 for 3.20V_{DC}.
12	**Pilot burst phase & level**	TP27$\boxed{0}\boxed{1}$  VTR Color bar Signal generator SC OUT EXT. REF IN CH1 TP27 10:1 probe CH1 OUT Oscilloscope Vectorscope 	C237$\boxed{0}\boxed{1}$ (Phase) R492$\boxed{0}\boxed{1}$ (Level)	Color bar ↓ Y／C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{S-VHS}}$	(1) Make shortcircuits between TP24 and TP-GND on the video board. (2) Connect the oscilloscope's CH1 input to TP27. (3) Supply the scope's CH1 output to a vectorscope while supplying SC output of a signal generator to its EXT. REF terminal. (4) Adjust the phase of the burst signal by the PHASE VR so that the signal is normally positioned in the vectorscope screen. (5) Adjust C237 so that the phase of the pilot burst signal meets the U axis at an angle of 270° (in a downward direction). (6) Adjust the level of the burst signal by the GAIN VR so that the burst signal level is 5.0 scale divisions on the oscilloscope screen. (7) Adjust R492 so that the level of the pilot burst signal becomes 5.5 scale divisions (110%) on the screen.
13	**REC Y／C delay**	TP6$\boxed{0}\boxed{1}$ TP4$\boxed{0}\boxed{2}$	R68$\boxed{0}\boxed{2}$	Pulse & bar ↓ Y／C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{S-VHS}}$	(1) Connect the oscilloscope to TP6 and TP4 for ADD mode. (2) Perform recording in the S-VHS mode. (3) Set the center of the 20T pulse on the base as shown on the left and adjust R68 so that A:B = 5:0.4. (4) If nearly a flat wave connot be obtained by the above step, make the waveform of the 20T pulse symmetric in the both sides of the pulse center.
		TP9$\boxed{0}\boxed{1}$ TP5$\boxed{0}\boxed{2}$ 	R73$\boxed{0}\boxed{2}$		REC $\boxed{\text{VHS}}$	(5) Connect the oscilloscope to TP9 and TP5 for ADD mode. (6) Perform recording in the VHS mode. (7) Set the center of the 20T pulse on the base as shown on the left and adjust R73 so that A:B = 5:0.5. (8) If nearly a flat wave connot be obtained by the above step, make the waveform of the 20T pulse symmetric in the both sides of the pulse center.

No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
14	**REC** **color level** - MHVE-2H PB -  TRIG : $\boxed{1}\boxed{1}$ PRE／REC JUNC TP3 (D-FF) ⊖ SLOPE(CH1), ⊕ SLOPE(CH2)	TP22$\boxed{0}\boxed{1}$	R108$\boxed{0}\boxed{2}$	MHVE-2H	PB	(1) Play back the MHVE-2H alignment tape. ***Note: Adjust the TRACKING VR to the best tracking position.*** (2) Adjust the oscilloscope's GAIN control to set the higher channel output level at TP22 for 5.0 scale divisions.
	- S-VHS mode -  TRIG : $\boxed{1}\boxed{1}$ PRE／REC JUNC TP3 (D-FF) ⊖ SLOPE(CH1), ⊕ SLOPE(CH2)			Color bar ↓ Y／C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{S-VHS}}$ ↓ PB	(3) Record the color bars signal in the S-VHS mode and play it back. (4) Adjust R108 so that the level of same channel as the step (2) at TP22 is 6.3 scale divisions (+2dB).
			R105$\boxed{0}\boxed{2}$	MHVE-2	PB	(5) In the same manner as for the S-VHS mode, adjust for the VHS mode. (6) With the MHVE-2 alignment tape being played back, set the higher channel level for 5.0 scale divisions respectively. ***Note: Adjust the TRACKING VR to the best tracking position.***
	- VHS mode -  **PB level of self-recorded signals −1.0dB as against the PB level of the alignment tape.** TRIG : $\boxed{1}\boxed{1}$ PRE／REC JUNC TP3 (D-FF) ⊖ SLOPE(CH1), ⊕ SLOPE(CH2)			Color bar ↓ Y／C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{VHS}}$ ↓ PB	(7) Record the color bar signal in the VHS mode and play it back. (8) Adjust R105 so that TP22's level of the same channel as the step (6) becomes 4.5 scale divisions (−1.0dB).

No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
15	**CNR input level**	TP20$\boxed{0}\boxed{1}$  TRIG: VIDEO OUT	R426$\boxed{0}\boxed{1}$	Color bar ↓ Y／C 443 IN (CAMERA ADAPTER)	REC S-VHS ↓ PB	(1) Record the color bar signal in the S-VHS mode and play it back. (2) Adjust R426 so that the level is 0.27Vp-p.
16	**CNR NC balance**	TP19$\boxed{0}\boxed{1}$  TRIG: VIDEO OUT	R424$\boxed{0}\boxed{1}$ L30$\boxed{0}\boxed{1}$	Color bar ↓ Y／C 443 IN (CAMERA ADAPTER)	REC S-VHS ↓ PB	(1) Record the color bar signal in the S-VHS mode and play it back. (2) Alternately adjust R424 and L30 to minimize the signal level.
17	**CNR feedback gain**	TP19$\boxed{0}\boxed{1}$  C OUT V-rate A TP19 Magnify time axis. C B TRIG: VIDEO OUT B : C = 2 : 1	R425$\boxed{0}\boxed{1}$	MHVE-2	PB	(1) Shortcircuit between TP11 and GND on the video board. (2) Magnify the portion "A" of the waveform by the oscilloscope's time axis. (3) In the magnified view of the waveform, set the portion "B" (maximum amplitude) for 4.0 scale divisions on the oscilloscope with its GAIN control. (4) Adjust R425 so that the level "C" 2H after the maximum amplitude "B" becomes 2.0 scale divisions. (5) After the adjustment, remove the shorting wire.

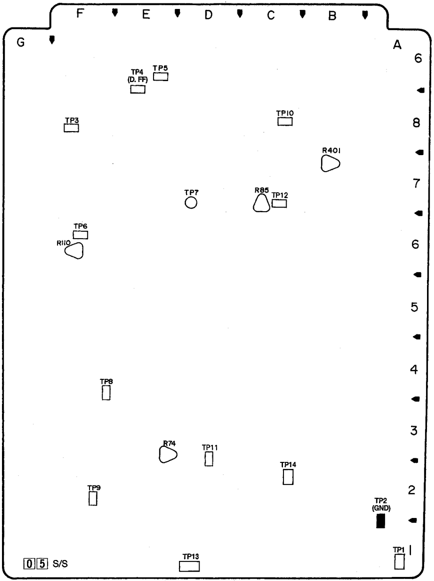
No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
18	**CCD (Non-correlation pulse)**	TP11$\boxed{0}\boxed{1}$	R173$\boxed{0}\boxed{1}$	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{S-VHS}}$ ↓ PB	(1) Record the color bar signal in the S-VHS mode and play it back. (2) Adjust R173 to minimize signal leve "A".
	(CCD level)	TP13$\boxed{0}\boxed{1}$	R610$\boxed{0}\boxed{1}$			(3) Adjust R610 to minimize signal leve "A".
	(COMB level)	TP12$\boxed{0}\boxed{1}$  V-rate TRIG: VIDEO OUT	R196$\boxed{0}\boxed{1}$			(4) Adjust R196 to minimize signal leve "A".
19	**VIDEO PB Y level**	VIDEO OUT (75Ω terminator) 	R390$\boxed{0}\boxed{1}$	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC $\boxed{\text{S-VHS}}$ ↓ PB	(1) Record the color bar signal in the S-VHS mode and play it back. (2) Adjust R390 so that Y level is 1.0Vp-p.
			R389$\boxed{0}\boxed{1}$		REC $\boxed{\text{VHS}}$ ↓ PB	(1) Record the color bar signal in the VHS mode and play it back. (2) Adjust R389 so that Y level is 1.0Vp-p.

No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
20	**Frequency response**	Y OUT (75Ω terminator)	R49[0][2] (CH1) R54[0][2] (CH2)	Video sweeper ↓ Y/C 443 IN (CAMERA ADAPTER)	REC S-VHS ↓ PB	(1) Record the sweep signal in the S-VHS mode and play it back. (2) Adjust the oscilloscope's GAIN control to set the 100kHz signal level of higher channel for 5.0 scale divisions on the scope. ***Note: Turn off the oscilloscope's 20MHz filter.*** (3) Adjust R49(R54) so that the 3.0MHz signal level becomes 3.7 scale divisions (−2.5dB) respectively.
	 Set for 5.0 scale divisions Adjust for 3.7 scale divisions 100kHz 3.0MHz V-rate TRIG : TP3 [1][1] (D-FF) ⊖SLOPE(CH1), ⊕SLOPE(CH2)					
		VIDEO OUT (75Ω terminator)	R32[0][2]		REC VHS ↓ PB	(4) Record the sweep signal in the VHS mode and play it back. (5) Adjust the oscilloscope's GAIN control to set the 100kHz signal level of higher channel for 5.0 scale divisions on the scope. (6) Adjust R32 so that the 2.0MHz signal level of the same channel as the step (5) is 4.0 scale divisions (−2.0dB) respectively.
	 Set for 5.0 scale divisions Adjust for 4.0 scale divisions 100kHz V-rate 2.0MHz TRIG : TP3 [1][1] (D-FF) ⊖SLOPE(CH1), ⊕SLOPE(CH2)					
21	**Chroma level & phase**	VIDEO OUT (75Ω terminator)	R416[0][1] C198[0][1]	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC S-VHS ↓ PB	(1) Record the color bar signal in the S-VHS mode and play it back. (2) Adjust the vectorscope's GAIN control so that the burst signal is positioned in the normal position (+135°). (3) Alternately adjust R416 and C198 so that the magenta level is observed in the center of the "⊞" mark.
	 cy g R MG 75% YL b yl B G CY mg r Set the burst signal +135° position.					

to 3-18

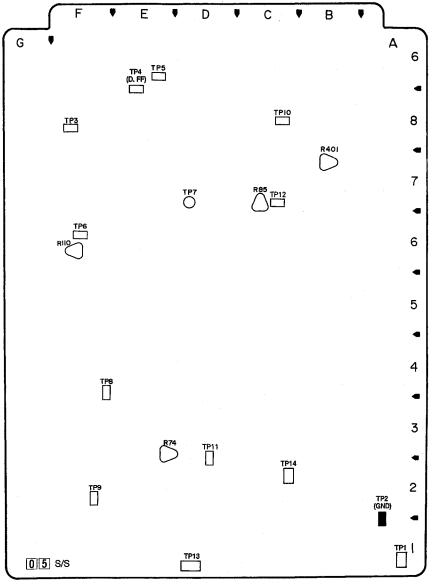
■ **LOCATION OF TP & VR**

— SYSCON/SERVO —


F
E
D
C
B
G
A
6
8
7
6
5
4
3
2
1
TP4 (D. FF)
TP5
TP3
TP10
R401
TP7
R85
TP12
TP6
R110
TP8
R74
TP11
TP14
TP9
TP2 (GND)
[0][5] S/S
TP13
TP1

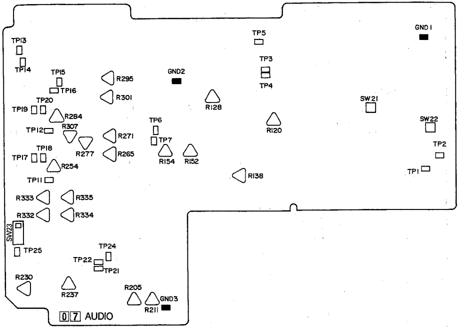
■ LOCATION OF TP & VR

— SYSCON/SERVO —



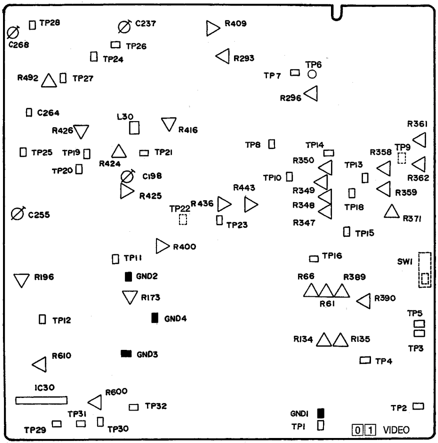
F
E
D
C
B
G
A
6
8
7
6
5
4
3
2
TP4 (D. FF)
TP5
TP3
TP10
R401
TP7
R85
TP12
TP6
R110
TP8
R74
TP11
TP14
TP9
TP2 (GND)
TP1
TP13
05 S/S

— AUDIO —

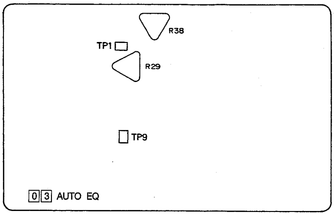


TP13
TP14
TP15
TP16
R295
GND2
TP5
TP3
TP4
GND1
R301
R128
SW21
TP20
TP19
R284
R307
TP12
R271
TP6
R120
SW22
TP7
TP18
R277
R265
TP17
R154
R152
TP2
R254
TP1
TP11
R138
R333
R335
R332
R334
SW23
TP25
TP24
TP22
TP21
R230
R237
R205
GND3
R211
07 AUDIO

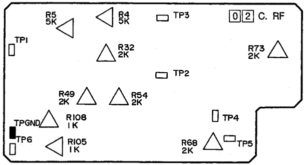
— VIDEO —


TP28
C268
C237
TP26
TP24
R409
R293
TP6
TP7
R296
R492
TP27
C264
L30
R426
R416
R361
TP25
TP19
TP21
R424
TP20
C198
R425
TP8
TP14
R350
TP13
R358
TP9
R362
TP10
R443
R349
TP18
R359
TP22
R436
R348
R371
TP23
R347
C255
TP15
R400
TP11
TP16
SW1
GND2
R196
R66
R389
R173
R61
R390
TP12
GND4
TP5
R134
R135
TP3
R610
GND3
TP4
IC30
R600
TP32
TP2
TP31
GND1
TP29
TP30
TP1
01 VIDEO

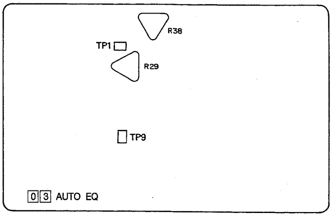
— AUTO EQ —

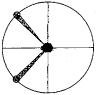
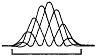
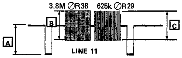

R38
TP1
R29
TP9
03 AUTO EQ

— C. RF —


R5
5K
R4
5K
TP3
02 C. RF
TP1
R32
2K
R73
2K
TP2
R49
2K
R54
2K
TP4
TPGND
R108
1K
TP6
R105
1K
R68
2K
TP5

— AUTO EQ —



No.	Item	Check point	Adjustment	Signal	Mode	Check and Adjustment
22	**PB color level**	Y/C 443 C OUT (75Ω terminator)	R409 01	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC S-VHS ↓ PB	(1) Input the EBU color bar signal directly to the vectorscope while adjusting the GAIN control so that the burst level crosses the scope's circumference. (2) With the vectorscope connected with the C OUT, record in the S-VHS mode and play it back. (3) Adjust R409 so that the burst level is the same as in the step (1).
		VIDEO OUT (75Ω terminator)	R400 01		REC VHS ↓ PB	(4) With the vectorscope connected with the VIDEO OUT, record in the VHS mode and play it back. (5) Adjust R400 so that the burst level is the same as in the step (1).
		 **Adjust to equalize level of the luminous point of the burst signal (+135°) with the level of the EBU color bar signal.**				
23	**PB Y/C delay**	VIDEO OUT (75Ω terminator)	R443 01	Pulse & bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC S-VHS ↓ PB	(1) Record the pulse & bar signal in the S-VHS mode and play it back. (2) Adjust R443 so that the modulated 20T pulse waveform is symmetric in the base.
		 **Flat or symmetric**	R436 01		REC VHS ↓ PB	(3) Record the pulse & bar signal in the VHS mode and play it back. (4) Adjust R436 so that the modulated 20T pulse waveform is symmetric in the base.
24	**AUTO EQ**	TP6 01	R38 03 R29 03	Color bar ↓ Y/C 443 IN (CAMERA ADAPTER)	REC S-VHS	(1) Confirm that the DIP SW of the AUTO EQ board is set as follows. SW1-1 : ON SW1-2 : ON SW1-3 : ON SW1-4 : OFF (2) Observe the AUTO EQ signal is output the 11th line. (3) Adjust the sync level (A) and the 3.8 MHz signal level (B) with R38 while adjust the 625 kHz signal level with R29 so that ratio between A, B and C is 4 : 2 : 4. A : B : C = 4 : 2 : 4
		 **A : B : C = 4 : 2 : 4**				

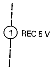
SECTION 4
DIAGRAM AND CIRCUIT BOARDS

4.1 FOREWORD

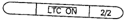
4.1.1 Expression of wiring

Wiring is expressed in four ways.

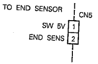
1) Wiring on the same board.



2) Wiring on the same board.



3)



4) Expression of connectors in the overall wiring diagram and the Mother board circuit diagram.
The following illustrates "CN9 pin 1, 2, 3 and 4".

	CN9
AL 12V	01
AL 12V	02
GND	03
GND	04

4.1.2 Signal flow on the diagram

The following arrow marks indicate the specified signal parts respectively.

➡ : RECORDING or E-E SIGNAL PATH
⇨ : PLAYBACK SIGNAL PATH
➩ : REC/PLAY SIGNAL PATH

4.1.3 Measurement of voltage and waveform

1) Voltage
Measured by digital voltmeter both in the S-VHS REC and S-VHS PLAY BACK mode.

2) Waveform
VIDEO: Unless otherwise indicated, (a) color bars signal input through Y/C 443 IN terminal of the CAMERA ADAPTER in REC, (b) color bars signal in PB.

Note: Indicated voltage were measured as directly at respective pins of semiconductors and connectors.

4.1.4 Unit of value

Unless otherwise specified:

1) Resistance is in Ω (1/6 W, 1/8 W).
2) Capacitance in μF.
3) Inductance in μH.
4) All diodes are 1SS133.
5) Parts with the asterisk (*) are not used in this model.

4.1.5 Circuit board locations

Board No.	Board Name	Page of diagram			
		Block diagram	Schematic diagram	Circuit board	Parts list
01	VIDEO (Includ 29 DL)	4-6	4-10,11,12	4-13, 14	6-1(11)
02	C. RF	4-6	4-16	4-17	6-12
03	A. EQ.	4-6	4-18	4-19	6-14
04	PRE/REC	—	4-20	4-21	6-15
05	SYSCON/SERVO	4-8, 9	4-28	4-29	6-17
06	REGULATOR	—	4-32	4-33	6-20
07	AUDIO	4-7	4-24, 25	4-26, 27	6-22
08	LCD	—	4-37	—	6-28
09	TIME CODE (SA-R200E)	—	4-38	4-39	2 (SA-R200E)
10	MOTHER	—	4-5	4-4	6-29
11	PRE/REC JUNC	—	4-22	4-22	6-29
14	POWER CTL (Includ POWER CTL SUB)	—	4-23	4-23	6-30
15	CONNECTOR	—	4-5	4-35	6-30
16	50PIN CONNECTOR	—	4-30	4-30	6-30
17	MODE SENSOR	4-8	4-5	4-35	6-31
18	OPERATION	—	4-31	4-31	6-31
19	MDA	—	4-34	4-35	6-31
20	MECHA IF	4-8	4-36	4-35	6-32
21	MECHA JUNC	—	4-36	4-35	6-32
22	END SENSOR	4-8	4-5	4-35	6-32
23	START SENSOR	4-8	4-5	4-35	6-32
24	MDA JUNC	—	4-5	4-35	6-33
25	POWER SW	—	4-5	4-35	6-33
26	A/C HEAD	—	4-5	4-35	6-33
35	REEL SENSOR	4-8	4-5	4-35	6-33

4.1.6 Shapes of transistor & diodes

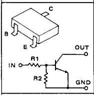
- **Transistors**

DTA124EK	2
DTA144EK	2
DTC114EK	1
DTC114YK	1
DTC144EK	1
DTC144EU	1
FMG2	3
FMS1	4
FMW1	5
IMX1	6
IMZ1	7
IMZ2	8
2SA1022C	9
2SB709	9
2SC2412K	9
2SC2778	9
2SC4081	9
2SD601/A	9
2SD602/A	9
2SK621	10

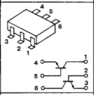
- **Diodes**

DAN202K	11
DAP202K	12
DA204K	14
MA28WA	13
MA3056	13
MA3075	13

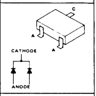
1


C
B
E
OUT
R1
IN
R2
GND

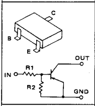
6


4
5
6
3
2
1
1
4
2
5
3
6

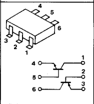
11


C
A
CATHODE
A
ANODE

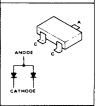
2


C
B
E
OUT
R1
IN
R2
GND

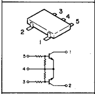
7


4
5
6
3
2
1
1
4
2
5
3
6

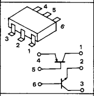
12


A
C
ANODE
C
CATHODE

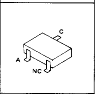
3


3
4
5
2
1
5
1
4
3
2

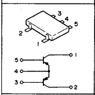
8


4
5
6
3
2
1
1
4
2
5
6
3

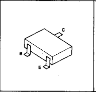
13



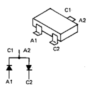
4


3
4
5
2
1
5
1
4
3
2

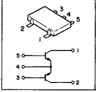
9



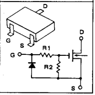
14


C1
A2
A1
C2
C1
A2
A1
C2

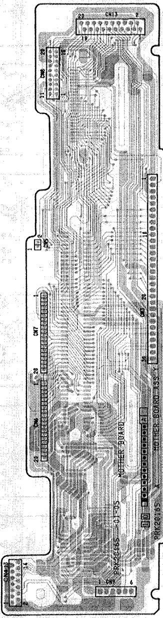
5


3
4
5
2
1
5
1
4
3
2

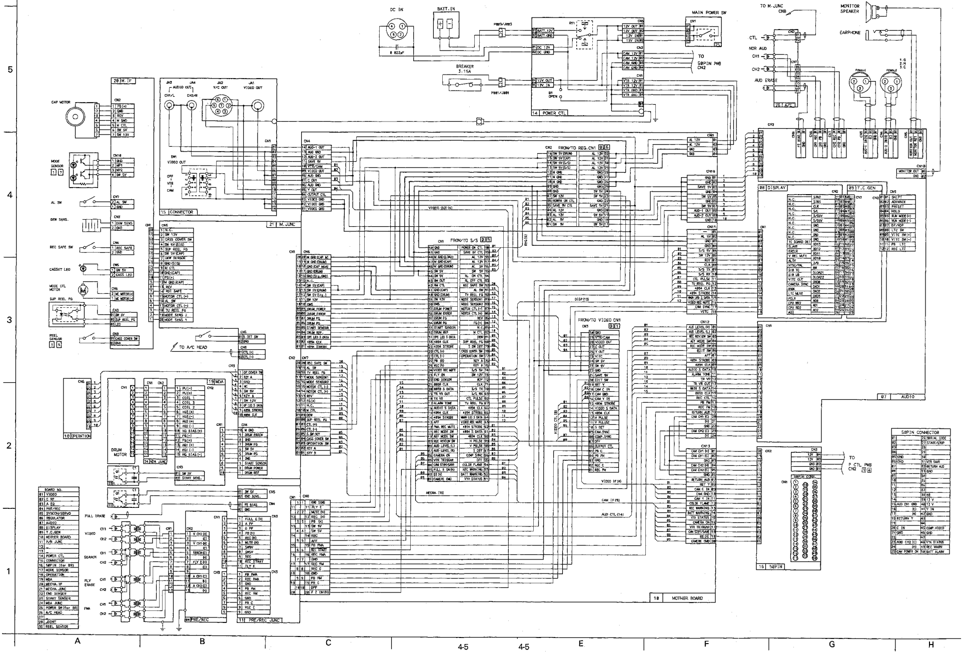
10


D
G
S
D
R1
G
R2
S

4.2 MOTHER CIRCUIT BOARD


20
CN13
2
19
1
20
10
CN8
11
1
2
1
CN5
1
CN7
28
1
CN6
20
1
20
CN3
36
MOTHER BOARD
MOTHER BOARD ASS'Y
A
PRK20165 -01-05
PRK20165
CN4
13
14
1
2
1
CN9
6
6
5
4
3
2
1
A
B
C
D

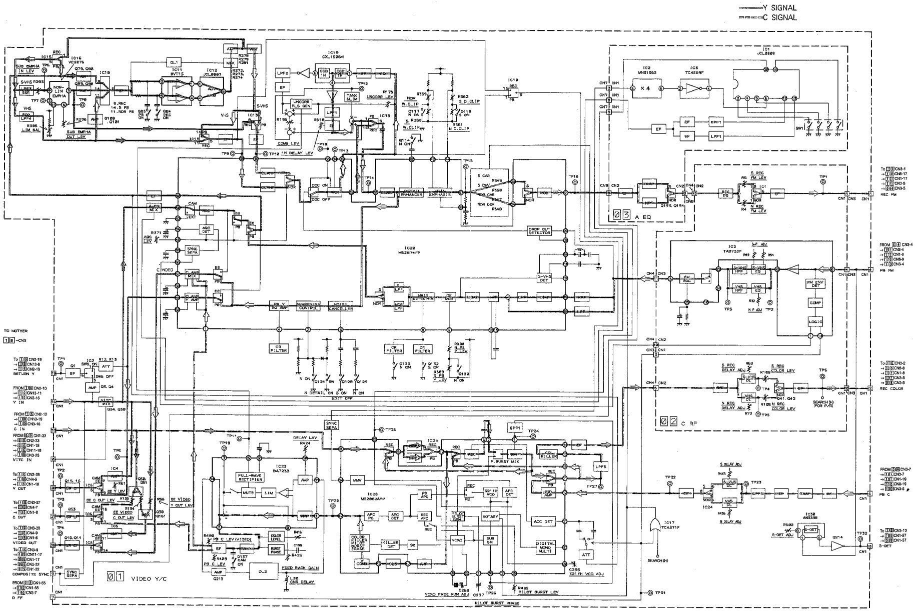
4.3 OVERALL WIRING DIAGRAM


DC IN
BATT.IN
BREAKER 3.15A
MAIN POWER SW
TO M.JUNC CN8
MONITOR SPEAKER
EARPHONE
TO 50PIN PWB CN2
14 POWER CTL
26 A/C
20 M.IF
CAP MOTOR
MODE SENSOR
AL SW
DEW SENS.
REC SAFE SW
CASSET LED
MODE CTL MOTOR
SUP REEL FG
REEL SENSOR
15 CONNECTOR
21 M.JUNC
VIDEO OUT
AUDIO OUT
Y/C OUT
FROM/TO REG.CN1
FROM/TO S/S
FROM/TO VIDEO CN1
08 DISPLAY
09 T.C.GEN
07 AUDIO
18 OPERATION
19 MDA
DRUM MOTOR
24 MDA JUNC
TO A/C HEAD
FULL ERASE
VIDEO
SEARCH
FLY ERASE
FMA
04 PRE/REC
11 PRE/REC JUNC
10 MOTHER BOARD
16 50PIN
TO P.CTL PWB CN2
A
B
C
D
E
F
G
H
1
2
3
4
5
6

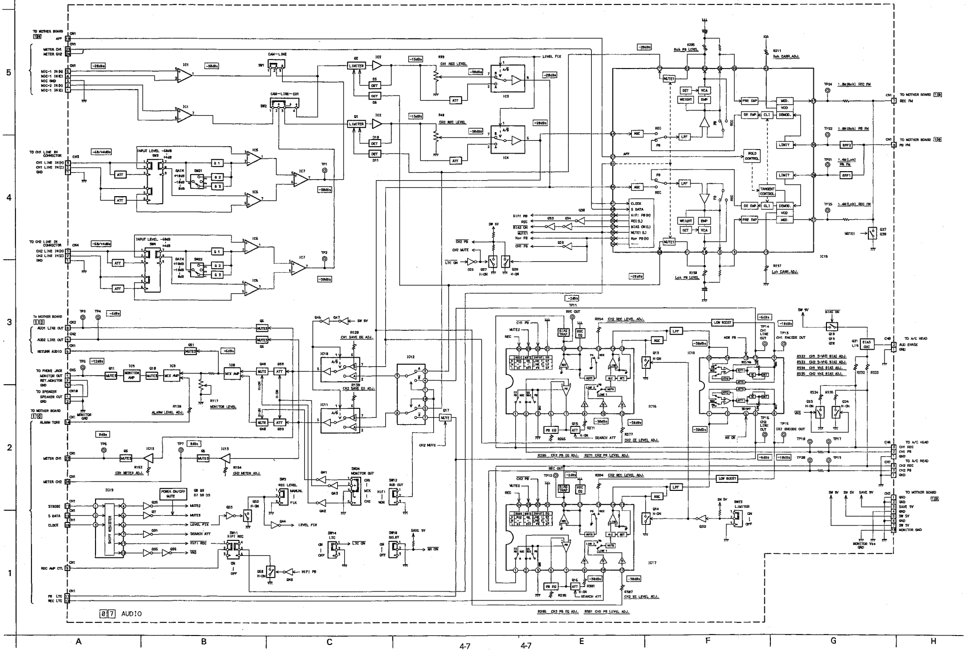
BOARD NO.	
01	VIDEO
02	C RF
03	A EQ
04	PRE/REC
05	SYSCON/SERVO
06	REGULATOR
07	AUDIO
08	DISPLAY
09	T.C.GEN
10	MOTHER BOARD
11	P/R JUNC
12	–
13	–
14	POWER CTL
15	CONNECTOR
16	50PIN (for BR)
17	MODE SENSOR
18	OPERATION
19	MDA
20	MECHA.IF
21	MECHA.JUNC
22	END SENSER
23	START SENSER
24	MDA JUNC
25	POWER SW(for BR)
26	A/C HEAD
27	–
28	JOINT
35	REEL SENSOR

50PIN CONNECTOR			
01		26	SERIAL CODE
02		27	START/STOP
03		28	
04		29	
05	GND	30	
06	GND	31	VTR SAVE
07		32	RETURN AUD
08		33	GND
09		34	
10		35	
11		36	
12		37	
13		38	EE
14		39	12 V
15	AUD CH1 GND	40	12 V
16	(C)	41	Y IN
17	(H)	42	GND
18	RETURN Y	43	
19		44	
20	C IN	45	COMP.VIDEO
21	GND	46	GND
22		47	
23	AUD CH2 (C)	48	VTR STATUS
24	(H)	49	REC WARN
25	CAM POWER ON	50	BATT ALARM

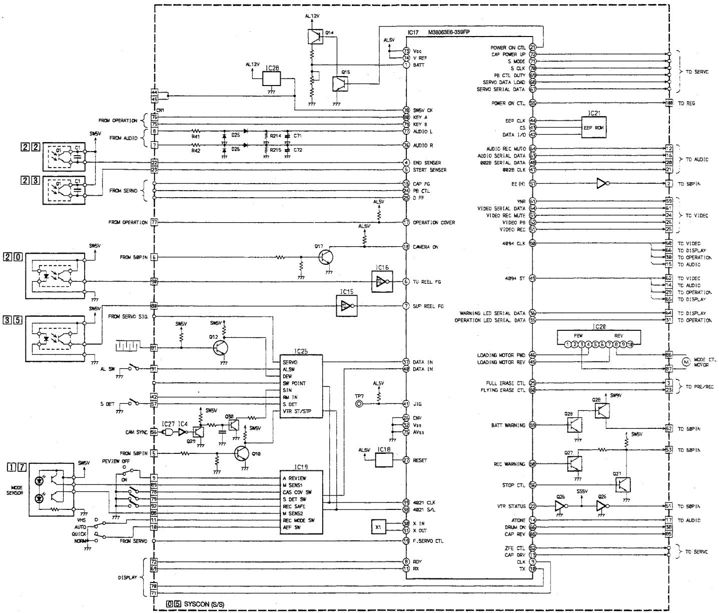
4.4 VIDEO BLOCK DIAGRAM


Y SIGNAL
C SIGNAL
IC15 REC
IC16 VC2076
SUB EMPHA IN LEV
S-VHS R295
NON-LIN EMPHA
VHS
R305 LIM BAL
SUB EMPHA OUT LEV
IC11 BVT15
IC12 JCL0007
DL1
MIX
R278, R279, R281
R272, R273, R274
IC19 CXL1506M
CCD 1H
LPF2
EF
UNCORR PLS GEN
TANK & LIM
R173 UNCORR LEV
COMB LEV
1H DELAY LEV
TP9
TP10
TP12
TP13
TP14
TP15
TP16
TP18
DOC ON
DOC OFF
NOR W.CLIP
S W.CLIP
R362 S D.CLIP
R361 N D.CLIP
R359
R358
Q117 N ON
Q118 S ON
Q114 N ON
IC10 REC PB
S CAR
S DEV
NOR CAR
NOR DEV
R349
R350
R347
R348
DETAIL ENHANCER
MAIN EMPHASIS
MOD
DROP OUT DETECTOR
IC20 M52074FP
CAM
EXT
A-EQ MIX
AGC
AGC DET
AGC LEV
R371
SYNC SEPA
C.VIDEO
CLAMP MIX
CLAMP Y AMP
EE
PB
PB Y EQ AMP
SHARPNESS CONTROL
NOISE CANCELLER
MAIN DE-EMPHA
DE MOD
S LPF
NOR LPF
3-VHS DET
CR FILTER
Q133 N ON
Q132 S ON
R390 N PB Y LEV
R389 S PB Y LEV
Q130
N ON
Q124 SW
Q128 Q129
N DETAIL ON S ON N ON
EDIT OFF
TO MOTHER
1 0-CN3
To 1 0 CN3-19
→ 1 0 CN13-6
→ 1 6 CN2-13
RETURN Y
TP1
Q1
EF
IC2 SW5 ON
SW5 OFF
R12, R13
ATT
AMP
Q5, Q4
FROM 1 6 CN2-10
→ 1 0 CN13-11
→ 1 6 CN3-16
Y IN
VITC MIX
Q34, Q38
FROM 1 6 CN2-12
→ 1 0 CN13-19
→ 1 6 CN3-18
C IN
FROM 0 0 CN1-33
→ 0 6 CN2-33
→ 0 0 CN1-18
→ 1 0 CN11-18
→ 1 6 CN3-25
VITC IN
TP5
To 1 0 CN3-26
→ 1 0 CN4-5
→ 1 6 CN1-10
Y OUT
IC4
Q15, 16
SW EF
EE Y LEV
EE C OUT LEV
EE VIDEO
C OUT LEV
R134
R136
R61
Q58, Q61
Q50, Q51
R55 EE VIDEO Y OUT LEV
To 1 0 CN3-27
→ 1 0 CN4-7
→ 1 6 CN1-8
C OUT
Q53
IC5
To 1 0 CN3-28
→ 1 0 CN4-9
→ 1 6 CN1-6
VIDEO OUT
Q10, Q11
IC6
To 1 0 CN3-9
→ 1 0 CN11-17
→ 0 2 CN1-17
→ 0 6 CN2-32
→ 0 5 CN1-32
COMPOSITE SYNC
SYNC SEPA
0 1 VIDEO Y/C
FROM 0 5 CN1-55
→ 1 0 CN1-55
→ 1 0 CN3-7
D FF
TP11
TP19
DELAY LEV
R424
IC23 BA7233
FULL-WAVE RECTIFIER
MUTE
LIM
AMP
R400 PB C LEV (VIDEO)
COLOR LEVEL
BURST PHASE
R416
C198
R425
R409 PB C LEV
Q137 CAM ON
AMP Q213
DL2
FEED BACK GAIN
L38 CNR DELAY
TP25
TP24
BPF1
IC25 REC PB
BPF2
P.BURST MIX
COL. KILLER
LPF5
TP27
TP28
MMV
IC26 M52062AFP
PB APC
321 fH VCO
AFC DET
APC FC
APC DET
REC APC
PILOT BURST GEN
ROTARY
COLOR KILLER PILOT BURST PHASE
KILLER DET
90
VCXO
SUB BM
COMB
DES
ACC DET
DIGITAL MONO MULTI
ATT
C255 321fH VCO ADJ
C258 VCXO FREE RUN ADJ
C237 TP26
R492 PILOT BURST LEV
PILOT BURST PHASE
TP31
IC17 TC4S71F
SEARCH (H)
IC1 JCL0009
IC2 MN3106S
IC3 TC4S69F
× 4
EF
BPF1
LPF1
SW1
CN7 CN1
CN8 CN2
TRAP
HPF
Q193, Q194
0 3 A EQ
S REC FM LEV
N REC FM LEV
R5
R4
IC1
REC EQ
TP1
CN1 CN3 CN1
To 1 6 CN3-1
→ 1 0 CN8-17
→ 1 0 CN1-17
→ 1 0 CN3-5
→ 0 6 CN3-5
REC FM
IC2 TA8753F
S-F ADJ
R13
R54
S-VHS HPF
S-VHS EQ
VHS HPF
VHS EQ
FM AGC
FM ENV DET
COMP
LOGIC
R32
TP3
N F ADJ
TP2
FROM 0 6 CN3-4
→ 1 0 CN3-4
→ 1 0 CN1-9
→ 1 0 CN8-9
→ 1 6 CN3-4
PB FM
S REC DELAY ADJ
R58
S REC COLOR LEV
R168
S-VHS DL
VHS DL
TP4
Q41, Q42
R165 N REC COLOR LEV
N REC DELAY ADJ
R73
TP5
TP6
SEARCH (H) (FOR P/R)
0 2 C RF
To 1 6 CN3-2
→ 1 0 CN8-8
→ 1 0 CN1-8
→ 1 0 CN3-8
→ 0 6 CN3-8
REC COLOR
S DELAY ADJ
R443
S-VHS DL
VHS DL
R435
N DELAY ADJ
IC24
TP22
TP23
LPF
TRAP
FROM 0 6 CN3-7
→ 1 0 CN3-7
→ 1 0 CN1-19
→ 1 0 CN8-19
→ 1 6 CN3-6
PB C
IC30 AN3398
R502 S-DET ADJ
S-DET
Q214
TP32
To 1 0 CN3-10
→ 1 0 CN1-57
→ 1 0 CN1-57
S-DET
6
5
4
3
2
1
A
B
C
E
F
G
H

4.5 AUDIO BLOCK DIAGRAM

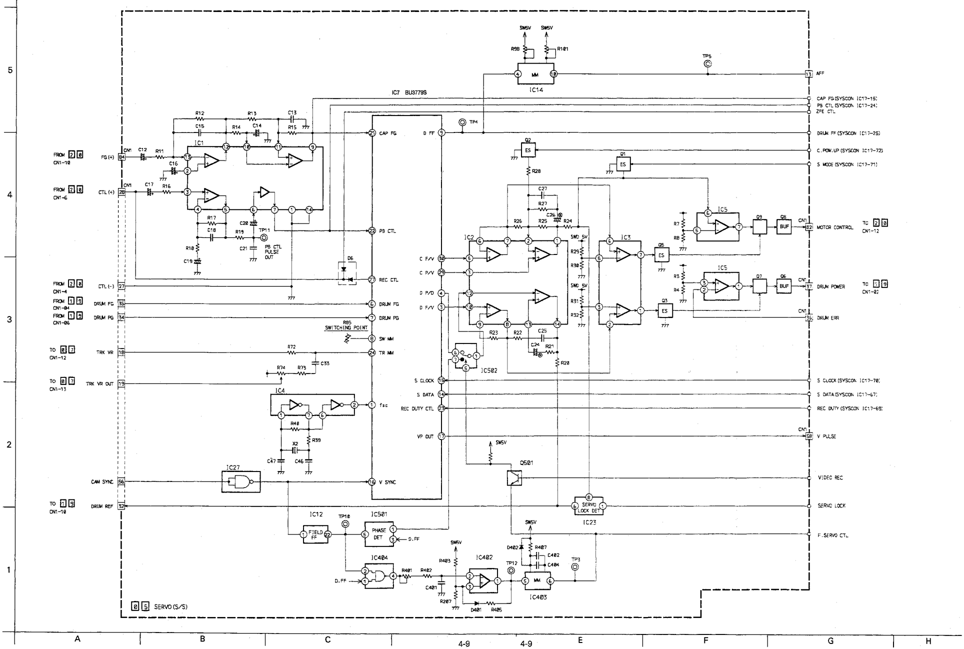

TO MOTHER BOARD
AFF
METER CH1
METER CH2
MIC-1 IN(H)
MIC-1 IN(C)
MIC GND
MIC-2 IN(H)
MIC-1 IN(C)
IC1
CAM-LINE
CAM-LINE-CH1
SW1
SW2
LIMITER
DET
IC2
IC3
IC4
CH1 REC LEVEL
CH2 REC LEVEL
LEVEL FIX
ATT
TO CH1 LINE IN CONNECTOR
CH1 LINE IN(H)
CH1 LINE IN(C)
GND
INPUT LEVEL -60dB +4dB
GAIN +10dB -10dB 0dB
SW21
IC5
IC7
TP1
TO CH2 LINE IN CONNECTOR
CH2 LINE IN(H)
CH2 LINE IN(C)
SW4
SW22
IC6
TP2
AUD1 LINE OUT
AUD2 LINE OUT
RETURN AUDIO
MUTE
TO PHONE JACK
MONITOR OUT
RET.MONITOR
TO SPEAKER
SPEAKER OUT
MONITOR AMP
MIX AMP
R117 MONITOR LEVEL
R120 ALARM LEVEL ADJ.
ALARM TONE
R128 CH1 SAVE EE ADJ.
R139 CH2 SAVE EE ADJ.
IC10
IC11
IC12
CH2 MUTE
IC13
R152 CH1 METER ADJ.
R154 CH2 METER ADJ.
IC19
SHIFT RESISTER
POWER ON/OFF MUTE
STROBE
S DATA
CLOCK
MUTE2
MUTE3
LEVEL FIX
SEARCH ATT
HIFI REC
VHS
REC AMP CTL
PB LTC
REC LTC
SW3 REC LEVEL MANUAL FIX
SW24 MONITOR OUT CH1 MIX CH2
SW12 AUD OUT HIFI NOR
SW11 HIFI REC ON OFF
SW14 LTC ON OFF
SW16 DOLBY ON OFF
LTC ON
NR ON
SAVE 5V
HIFI PB
07 AUDIO
R285 Rch PB LEVEL
R211 Rch CARR.ADJ.
MUTE1
AGC
LPF
DET
VCA
WEIGHT
EMP
PRE EMP
MOD.
VCO
DE EMP
CLI
DEMOD.
HOLD CONTROL
TANGENT CONTROL
LIMIT
BPF1
BPF2
TP24 1.8M(Rch) REC FM
TP22 1.8M(Rch) PB FM
TP21 1.4M(Lch) PB FM
TP25 1.4M(Lch) REC FM
TO MOTHER BOARD
REC FM
PB FM
CLOCK
S DATA
HIFI PB(H)
REC(L)
BIAS ON(L)
MUTE1(L)
Nor PB(H)
CH2 PB
CH2 MUTE
CH1 PB
R237 Lch CARR.ADJ.
R239 Lch PB LEVEL
IC15
Q37 Q38
TP11 REC OUT
R254 CH2 REC LEVEL ADJ.
LOW BOOST
BIAS TRAP
REC EQ
PB EQ
IC16
IC17
IC18
R271
R277 CH2 EE LEVEL ADJ.
R265 CH2 PB EQ ADJ.
R271 CH2 PB LEVEL ADJ.
TP14 CH1 LINE OUT
TP13 CH1 ENCODE OUT
TP16 CH2 LINE OUT
TP15 CH2 ENCODE OUT
R532 CH1 S-VHS BIAS ADJ.
R533 CH2 S-VHS BIAS ADJ.
R534 CH1 VHS BIAS ADJ.
R535 CH2 VHS BIAS ADJ.
BIAS ON
BIAS OSC
TO A/C HEAD
AUD ERASE
CH1 REC
CH1 PB
CH2 REC
CH2 PB
R284 CH2 REC LEVEL ADJ.
R287 CH2 EE LEVEL ADJ.
R295 CH2 PB EQ ADJ.
R301 CH2 PB LEVEL ADJ.
SW23 LIMITER ON OFF
SAVE 9V
SW 9V
SW 5V
MONITOR GND
MONITOR Vss GND
A
B
C
D
E
F
G
H
1
2
3
4
5
6

4.6 SYSCON/SERVO BLOCK DIAGRAM (1/2)



6
5
4
3
2
1
AL12V
Q14
IC17 M38063E6-359FP
AL5V
73 Vcc
74 V REF
1 BATT
AL12V
IC28
Q15
44
45
CN1
78 SW5V CK
FROM OPERATION
76
75
80 KEY A
79 KEY B
FROM AUDIO
8
7
R41
R42
D25
D26
R214
R215
C71
C72
77 AUDIO L
76 AUDIO R
SW5V
22
Q1
C1
23
22
4 END SENSER
5 STERT SENSER
FROM SERVO
15 CAP FG
24 PB CTL
25 D FF
AL5V
FROM OPERATION 77
17 OPERATION COVER
AL5V
Q17
18 CAMERA ON
20
SW5V
FROM 50PIN 6
IC16
90
6 TU REEL FG
IC15
SW5V
80
7 SUP REEL FG
35
FROM SERVO SIG.
SW5V
SW5V
Q12
91
IC25
SERVO
ALSW
DEW
SW POINT
SIN
RM IN
S DET
VTR ST/STP
37 DATA IN
40 DATA IN
AL SW 91
TP7
AL5V
41 JIG
S DET
42
57
SW5V
Q30
SW5V
IC27 IC4
CAM SYNC 56
Q29
26 CNV
32 Vss
75 AVss
FROM 50PIN 5
Q10
AL5V
IC18
27 RESET
17
SW5V
MODE SENSOR
PEVIEW OFF
ON
9
89
78
79
92
88
11
10
IC19
A REVIEW
M SENS1
CAS COV SW
S DET SW
REC SAFE
M SENS2
REC MODE SW
AEF SW
39 4021 CLK
38 4021 S/L
VHS
AUTO
QUICK
NORM
X1
30 X IN
31 X OUT
FROM SERVO
19 F.SERVO CTL
DISPLAY
72
69
70
71
8 RDY
11 RX
05 SYSCON (S/S)
POWER ON CTL 21
CAP POWER UP 72
S MODE 71
S CLK 70
PB CTL DUTY 69
SERVO DATA LOAD 68
SERVO SERIAL DATA 67
TO SERVC
POWER ON CTL 55
100 TO REG
IC21
EEP CLK 44
CS 43
DATA I/O 42
EEP ROM
AUDIO REC MUTO 64
AUDIO SERIAL DATA 63
0028 SERIAL DATA 48
002B CLK 47
12
16
20
21
TO AUDIC
EE (H) 57
2 TO 50PIN
YNR 61
VIDEO SERIAL DATA 54
VIDEO REC MUTE 53
VIDEO PB 52
VIDEO REC 51
59
61
24
26
25
TO VIDEC
4094 CLK 50
60 TO VIDEO
66 TO DISPLAY
30 TO OPERATION
15 TO AUDIC
4094 ST 49
62 TO VIDEC
14 TO AUDIC
29 TO OPERATION
65 TO DISPLAY
WARNING LED SERIAL DATA 36
OPERATION LED SERIAL DATA 35
64 TO DISPLAY
31 TO OPERATION
IC20
FEW
REV
1 2 3 4 5 6 7 8 9 10
LOADING MOTOR FWD 46
LOADING MOTOR REV 45
86
87
M
MODE CTL MOTOR
FULL ERASE CTL 29
PLYING ERASE CTL 60
3
23
TO PRE/REC
SW9V
Q28
Q28
BATT WARNING 59
52 TO 50PIN
SW5V
53 TO 50PIN
Q27
REC WARNING 58
Q27
STOP CTL 56
SS5V
Q26
Q26
VTR STATUS 22
51 TO 50PIN
ATONE 14
DRUM ON 66
CAP REV 65
17 TO AUDIC
38
85
ZFE CTL 52
CAP DRV 13
TO SERVC
CLK 9
TX 10
A
B
C
E
F
G
H

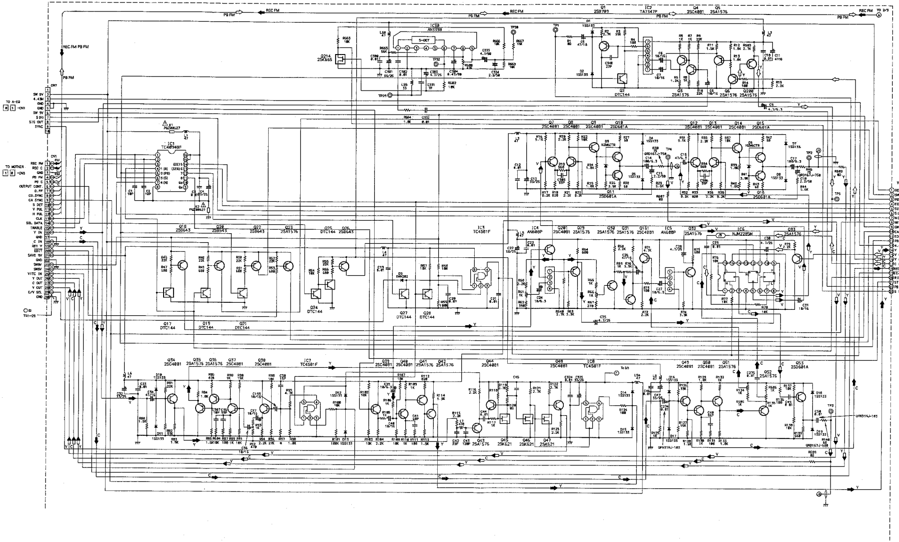
— SYSCON/SERVO BLOCK DIAGRAM (2/2) —



6
5
4
3
2
1
A
B
C
E
F
G
H
SW5V
R98
R101
TP5
MM
IC14
AFF
IC7 BU3779S
CAP FG (SYSCON IC17-15)
PB CTL (SYSCON IC17-24)
ZFE CTL
DRUM FF (SYSCON IC17-25)
C.POW.UP (SYSCON IC17-72)
S MODE (SYSCON IC17-71)
R12
R13
C13
C15
R14
C14
R15
IC1
TP4
CAP FG
D FF
Q2
ES
Q1
R28
FROM 2 0
CN1-10
FG (+)
CN1
C12
R11
C16
FROM 2 0
CN1-6
CTL (+)
C17
R16
C27
R27
C26
R24
R26
R25
IC5
R7
R8
Q9
Q8
BUF
MOTOR CONTROL
TO 2 0
CN1-12
R17
C18
R19
C20
TP11
R18
C19
C21
PB CTL PULSE OUT
PB CTL
D6
IC2
IC3
SW0 5V
R29
R30
Q5
R3
R4
Q7
Q6
DRUM POWER
TO 1 9
CN1-02
C F/V
C P/V
D P/D
D F/V
SW0 5V
R31
R32
Q3
DRUM ERR
FROM 2 0
CN1-4
CTL (-)
REC CTL
FROM 1 9
CN1-04
DRUM FG
FROM 1 9
CN1-06
DRUM PG
R85
SWITCHING POINT
SW MM
R23
R22
C25
C24
R21
R20
IC502
TO 0 7
CN1-12
TRK VR
R72
TR MM
C33
R74
R73
TO 0 7
CN1-13
TRK VR OUT
S CLOCK
S DATA
REC DUTY CTL
S CLOCK (SYSCON IC17-70)
S DATA (SYSCON IC17-67)
REC DUTY (SYSCON IC17-69)
IC4
fsc
R40
R39
X2
C47
C46
VP OUT
V PULSE
SW5V
Q501
IC27
CAM SYNC
V SYNC
VIDEO REC
TO 1 9
CN1-10
DRUM REF
SERVO LOCK DET
IC23
SERVO LOCK
IC12
TP10
IC501
FIELD FF
PHASE DET
D.FF
SW5V
F.SERVO CTL
D402
R407
C402
C404
SW5V
R403
IC404
IC402
TP12
TP3
D.FF
R401
R402
C401
R207
D401
R405
IC403
0 5 SERVO (S/S)

4.7 VIDEO SCHEMATIC DIAGRAM (1/3)

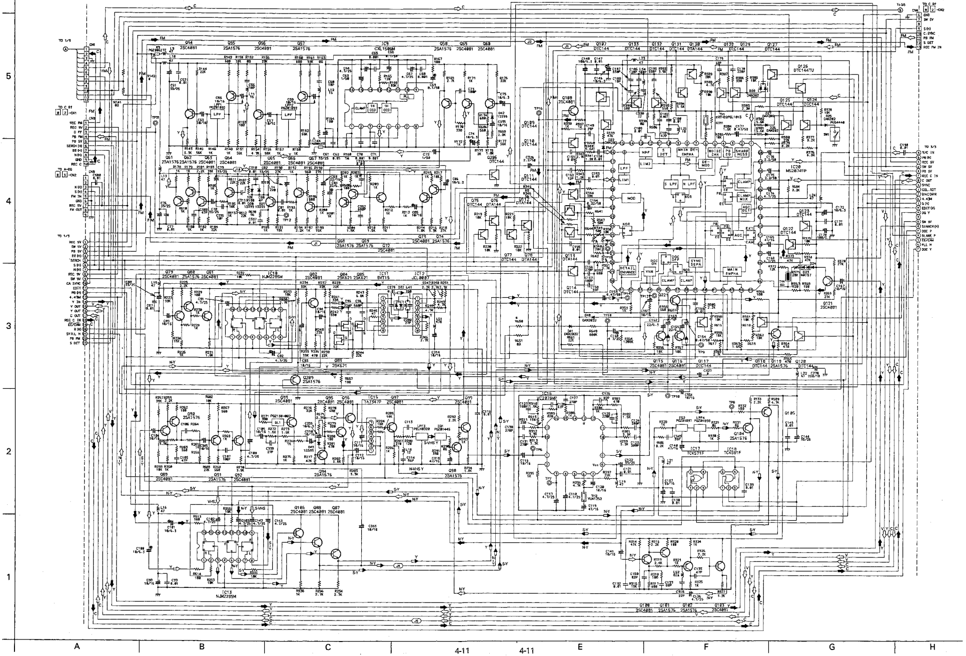
INPUT/OUTPUT PROCESS



REC FM
PB FM
TO 2/3
IC30 AN3398
Q214 2SK665
Q1 2SB709
IC2 TA7347P
Q4 2SC4081
Q5 2SA1576
Q2 DTC144
Q3 2SA1576
Q6 2SA1576
Q200 2SA1576
TO A-EQ
CN7
SW 5V
4.43M
GND
SW 9V
S (H)
SIG OUT
SYNC
IC1 TC4094BF
K1 PQZ0B627
TO MOTHER
CN1
Q7 2SC4081
Q8 2SC4081
Q9 2SC4081
Q10 2SD601A
Q11 2SD601A
Q12 2SC4081
Q13 2SC4081
Q14 2SC4081
Q15 2SD601A
Q16 2SD601A
Q18 2SB643
Q20 2SB643
Q22 2SB643
Q23 2SA1576
Q25 DTC144
Q26 2SB643
Q17 DTC144
Q19 DTC144
Q21 DTC144
Q24 DTC144
Q27 DTC144
Q28 DTC144
IC3 TC4S81F
IC4 AN608P
Q201 2SC4081
Q29 2SA1576
Q30 2SA1576
Q31 2SA1576
Q101 2SC4081
IC5 AN608P
Q32 2SA1576
IC6 NJM2285M
Q33 2SA1576
Q34 2SC4081
Q35 2SA1576
Q36 2SA1576
Q37 2SC4081
Q38 2SC4081
IC7 TC4S81F
Q39 2SC4081
Q40 2SC4081
Q41 2SA1576
Q42 2SA1576
Q44 2SC4081
Q48 2SC4081
IC8 TC4S81F
Q43 2SA1576
Q45 2SK621
Q46 2SK621
Q47 2SK621
Q49 2SC4081
Q50 2SC4081
Q51 2SA1576
Q52 2SA1576
Q53 2SD601A
6
5
4
3
2
1
A
B
C
E
F
G
H

— VIDEO SCHEMATIC DIAGRAM (2/3) —

Y PROCESS



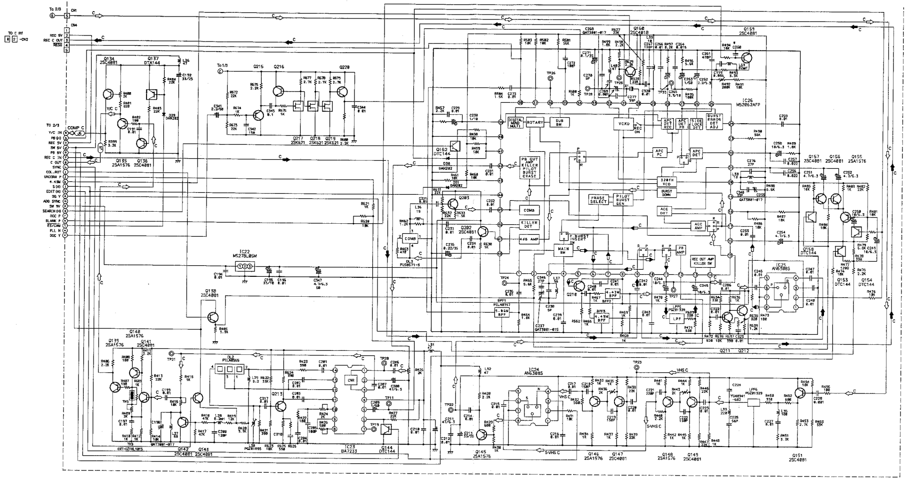
6
5
4
3
2
1
A
B
C
D
E
F
G
H
TO 1/3
CN6
CN8
CN9
CN4
TO 3/3
TO C R1
TO A-EQ
Q54 2SC4081
Q55 2SA1576
Q56 2SC4081
Q57 2SA1576
IC9 CXL1506M
Q58 2SA1576
Q59 2SC4081
Q60 2SC4081
Q107 DTC144
Q133 DTC144
Q132 DTC144
Q131 DTC144
Q130 DTA144
Q128 DTC144
Q129
Q127 DTC144
Q126 DTC144TU
Q125 DTC144
Q124 DTC144
Q108 2SC4081
Q109 DTC144
Q110 DTC144
Q111 DTC144
Q113 DTA144
Q114 DTC144
IC20 M52074FP
Q123 DTC144
Q122 DTC144
Q121 2SC4081
Q61 2SA1576
Q62 2SA1576
Q63 2SC4081
Q64 2SC4081
Q65 2SC4081
Q66 2SC4081
Q67 2SC4081
Q206 DTC144
Q73 2SC4081
Q74 2SA1576
Q75 DTC144
Q76 DTA144
Q77 DTC144
Q78 DTA144
Q68 2SA1576
Q69 2SA1576
Q72 2SC4081
Q79 2SC4081
Q80 2SA1576
Q81 2SC4081
IC10 NJM2285M
Q82 2SC4081
Q84 2SK621
Q85 2SK621
IC11 BVT15
IC12 JCL0007
Q83 2SK621
Q209 2SA1576
Q115 2SC4081
Q116 2SC4081
Q117 DTC144
Q118 DTC144
Q119 2SA1576
Q120
Q89 2SC4081
Q90 2SA1576
Q91 2SA1576
Q92 2SC4081
Q93 2SC4081
Q94 2SA1576
Q95 2SC4081
Q96 2SC4081
IC15 TA7347P
Q97 2SC4081
Q98 2SA1576
Q99 2SC4081
IC16 VC2070MP
Q105
Q104 2SA1576
IC17 TC4571F
IC18 TC4S01F
IC13 NJM2285M
Q106 2SC4081
Q88 2SC4081
Q87 2SC4081
Q100 2SC4081
Q101 2SA1576
Q102 2SA1576
Q103 2SC4081
LPF
CLAMP
PLL
HPF
S DET
MAIN DE-EMPHA
NOISE CAN
PB EQ
SHARP NESS
LIM1
LIM2
MOD
NOR
S LPF
N LPF
AGC DET
AGC
DETAIL ENHANCE
YNR
DOC ON
DOC OFF
SYNC SEPA
MAIN EMPHA
DL1
LPF3
EQ1
S-VHS Y
N-VHS Y
LPF4
EQ2
FM
Y
C
S-Y
N-Y
VHS
S-VHS
J1
J2
J3
J4
TP16
TP17
TP18
TP12
TP9
TP8
TP6
TP7
TP10
SW1
REC FM
REC 5V
D FF
PB FM
PB 5V
SERCH (H)
EE (H)
N (H)
GND
REC C IN
N (H)
S (H)
FM IN
REC 5V
FM OUT
SW 5V
PB 5V
EE (H)
SERCH
S (H)
N (H)
REC 9V
SW 9V
CA SYNC
EDIT
PB (H)
4.43M
Y IN
V OUT
Y OUT
C OUT
REC C IN
EE/CAM
R (H)
STILL H
PB FM
S DET
GND
SW 5V
S (H)
C.SYNC
PB FM
S DET
REC FM IN
Y/C IN
PB (H)
REC 5V
SW 5V
PB 5V
REC C IN
C OUT
SYNC
COL.ADT
UNCORR
4.43M
S (H)
EDIT (H)
DG Y
SW 9V
SEARCH (H)
DOC P
BLANK P
EE/CAM
PLL H
DOC Y

6

— VIDEO SCHEMATIC DIAGRAM (3/3) —

5

C PROCESS



To 2/3
CN1
CN4
TO C Rf
REC 5V
REC C OUT
RESΩ
To 2/3
COMP C
Y/C IN
PB (H)
REC 5V
SW 5V
PB 5V
REC C IN
C OUT
SYNC
COL.ROT
UNCORR P
4.43M
S (H)
EDIT (H)
DG Y
ADD SYNC
SW 9V
SEARCH (H)
DOC P
BLANK P
EE/CAM
PLL H
DOC Y
Q134 2SC4081
Q137 DTA144
Q135 2SA1576
Q136 2SC4081
To 1/3
Q215
Q216
Q220
Q217 2SK621
Q218 2SK621
Q219 2SK621
IC22 M5278L05M
Q138 2SC4081
Q140 2SA1576
Q139 2SA1576
Q141 2SC4081
DL2 PELN0565
IC23 BA7233
CNR
Q142 2SC4081
Q143 2SC4081
Q144 DTC144
Q152 DTC144
Q203
Q202 2SC4081
COMB
DL3 PUS0571-3
DIGITAL MONO MULTI
ROTARY
SUB BM
PB OUT AMP KILLER PILOT BURST ERASE
COMB
KILLER DET
4dB AMP
MAIN BM
P.BURST INSERT SW
PHASE SELECT
PILOT BURST GEN
VCXO
REC ON
APC DET REC
APC DET PB
SIDE LOCK DET
BURST ERROR DET ADJ
APC PC
APC DET
320fH VCO
BURST DOWN
ACC DET
ACC AMP
PB AMP
REC OUT AMP KILLER SW
IC26 M52062AFP
Q160 2SC4018
Q159 2SC4081
Q157 2SC4081
Q156 2SC4081
Q155 2SA1576
Q158 DTC144
IC25 AN6308S
Q153 DTC144
Q154 DTC144
Q210
BPF1 PELN0357
5.06M BPF
4.43M BPF
BPF2
BPF3
LPF5 PGZ01326
LPF
Q211
Q212
IC24 AN6308S
VHS C
S-VHS C
Q145 2SA1576
Q146 2SA1576
Q147 2SC4081
Q148 2SA1576
Q149 2SC4081
LPF6 PGZ01329
Q151 2SC4081
TP21
TP22
TP23
TP24
TP26
TP27
TP28
TP11
TP19

4

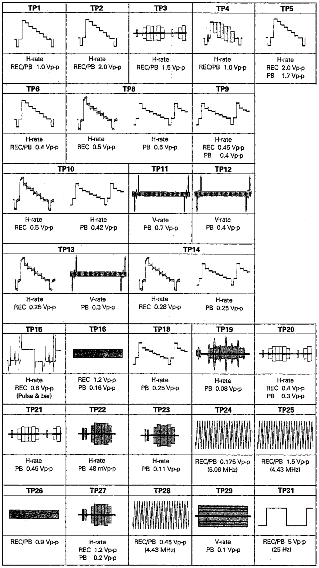
3

2

1

A	B	C	4-12	4-12	E	F	G	H

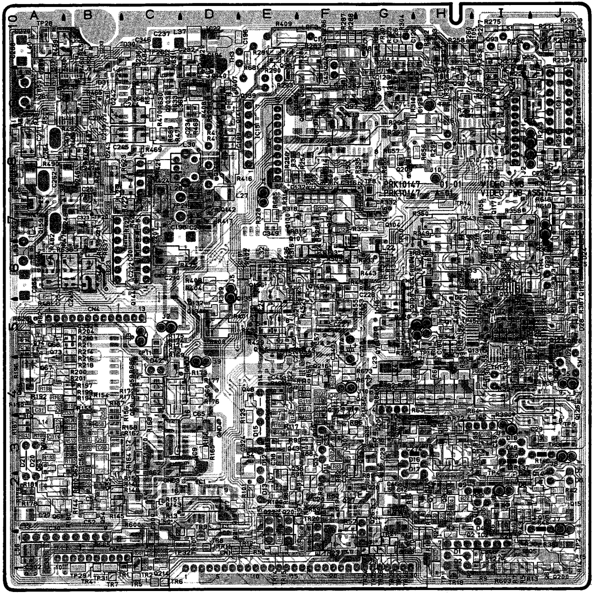
4.8 VIDEO CIRCUIT BOARD



Test point	Signal
TP1	H-rate REC/PB 1.0 Vp-p
TP2	H-rate REC/PB 2.0 Vp-p
TP3	H-rate REC/PB 1.5 Vp-p
TP4	H-rate REC/PB 1.0 Vp-p
TP5	H-rate REC 2.0 Vp-p PB 1.7 Vp-p
TP6	H-rate REC/PB 0.4 Vp-p
TP8	H-rate REC 0.5 Vp-p H-rate PB 0.6 Vp-p
TP9	H-rate REC 0.45 Vp-p PB 0.4 Vp-p
TP10	H-rate REC 0.5 Vp-p H-rate PB 0.42 Vp-p
TP11	V-rate PB 0.7 Vp-p
TP12	V-rate PB 0.4 Vp-p
TP13	H-rate REC 0.25 Vp-p V-rate PB 0.3 Vp-p
TP14	H-rate REC 0.28 Vp-p H-rate PB 0.25 Vp-p
TP15	H-rate REC 0.8 Vp-p (Pulse & bar)
TP16	REC 1.2 Vp-p PB 0.16 Vp-p
TP18	H-rate PB 0.25 Vp-p
TP19	H-rate PB 0.08 Vp-p
TP20	H-rate REC 0.4 Vp-p PB 0.3 Vp-p
TP21	H-rate PB 0.45 Vp-p
TP22	H-rate PB 48 mVp-p
TP23	H-rate PB 0.11 Vp-p
TP24	REC/PB 0.175 Vp-p (5.06 MHz)
TP25	REC/PB 1.5 Vp-p (4.43 MHz)
TP26	REC/PB 0.9 Vp-p
TP27	H-rate REC 1.2 Vp-p PB 0.2 Vp-p
TP28	REC/PB 0.45 Vp-p (4.43 MHz)
TP29	V-rate PB 0.1 Vp-p
TP31	REC/PB 5 Vp-p (25 Hz)

— SOLDER SIDE —

PRK10147A-01 VIDEO PWB ASSY PRK10147-01-01 VIDEO PWB



6
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A B C E F G H

6

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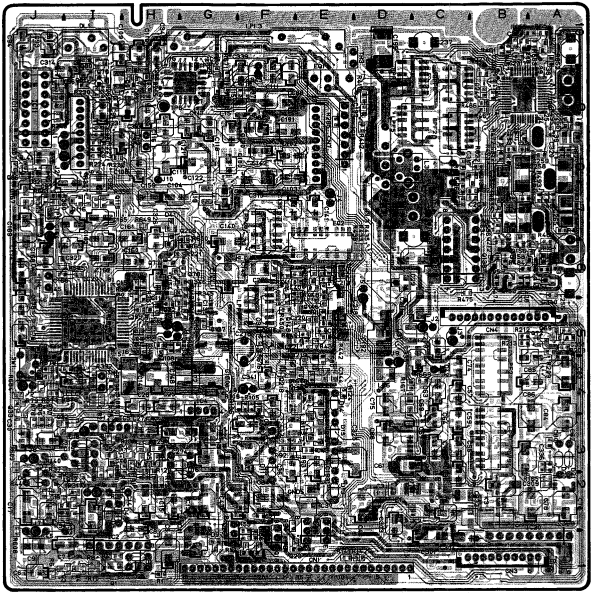
4

3

2

1

— PARTS SIDE —



VIDEO

SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	0.0	0.0
	2	5.0	0.0
	3	0.0	0.0
	4	5.1	0.0
	5	0.2	4.7
	6	4.5	4.4
	7	0.0	0.0
	8	0.0	0.0
	9	NC	NC
	10	NC	NC
	11	0.0	0.0
	12	0.0	0.0
	13	0.0	0.0
	14	5.0	0.0
	15	5.2	5.2
	16	5.2	5.2
IC2	1	6.2	6.2
	2	0.0	0.0
	3	6.2	6.2
	4	0.0	0.0
	5	5.3	0.0
	6	5.4	5.4
	7	9.0	9.0
IC3	1	8.0	8.1
	2	0.0	9.1
	3	0.0	0.0
	4	0.0	8.9
	5	9.1	9.1
IC4	1	5.2	5.2
	2	8.8	8.8
	3	2.3	2.3
	4	0.0	0.0
IC5	1	5.1	5.1
	2	8.8	8.8
	3	2.2	2.3
	4	0.0	0.0
IC6	1	4.5	4.5
	2	0.0	6.4
	3	3.8	3.8
	4	0.0	0.0
	5	2.7	2.7
	6	2.7	2.7
	7	0.0	6.4
	8	3.4	—
	9	3.6	3.4
	10	0.0	0.0
	11	3.4	3.4
	12	0.0	6.3
	13	8.8	8.8
	14	3.5	3.4
	15	0.0	0.0
	16	4.5	4.5
IC7	1	5.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
	5	5.1	5.2
IC8	1	4.7	4.7
	2	4.7	4.7
	3	0.0	0.0
	4	4.7	4.8
	5	5.1	5.2
IC9	1	0.0	2.0
	2	0.0	2.5
	3	0.0	0.0
	4	0.0	1.7
	5	0.0	0.0
	6	0.0	1.9
	7	0.0	0.0
	8	0.0	0.0
	9	0.2	5.0
	10	0.0	2.4
	11	0.0	0.0
	12	0.2	1.9
	13	0.2	1.9
	14	0.2	5.0
	15	0.2	0.9
	16	0.0	0.0
IC10	1	4.5	4.5
	2	0.2	4.7
	3	3.7	3.8
	4	0.0	0.0
	5	2.7	2.7
	6	2.7	2.7
	7	3.6	0.0
	8	3.6	3.4
	9	3.4	4.0
	10	0.0	0.0
	11	3.4	4.2
	12	0.0	3.7
	13	8.7	8.8
	14	—	3.4
	15	0.0	0.0
	16	4.4	4.5
IC11	1	7.0	7.0
	2	4.2	4.3
	3	4.2	4.2
	4	5.9	6.0
	5	3.5	3.6
	6	3.5	3.6
	7	0.0	0.0
	8	0.9	1.0
IC12	1	7.0	7.0
	2	8.7	8.8
	3	6.4	6.5
	4	5.9	6.0
	5	5.7	5.8
	6	4.9	4.9
	7	0.0	0.0
	8	3.8	3.9
IC13	1	4.5	4.5
	2	0.2	3.4
	3	3.8	3.8
	4	0.0	0.0
	5	2.1	2.1
	6	2.1	2.1
	7	0.2	3.4
	8	2.8	3.0
	9	—	2.8
	10	0.0	0.0
	11	2.8	—
	12	0.2	3.4
	13	8.8	8.9
	14	—	2.8
	15	0.0	0.0
	16	4.5	4.6
IC15	1	5.9	6.0
	2	0.0	0.0
	3	5.9	6.0
	4	0.0	0.0
	5	0.2	4.2
	6	5.1	5.2
	7	8.7	8.8
IC16	1	2.1	2.1
	2	0.4	4.8
	3	3.5	3.6
	4	3.5	3.5
	5	5.1	5.1
	6	2.3	2.3
	7	2.1	2.1
	8	5.1	5.1
	9	1.5	1.5
	10	3.0	2.9
	11	3.0	2.9
	12	3.0	2.9
	13	0.0	0.0
	14	3.0	3.0
	15	3.0	3.0
	16	2.2	2.1
	17	2.2	2.1
	18	2.2	2.1
IC17	1	2.9	5.2
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.2
	5	5.2	5.2
IC18	1	4.5	4.4
	2	0.2	4.7
	3	0.0	0.0
	4	0.0	5.1
	5	5.2	5.2
IC20	1	4.9	4.9
	2	2.5	2.5
	3	NC	NC
	4	3.1	0.7
	5	3.3	3.3
	6	3.7	3.6
	7	0.0	0.2
	8	3.0	2.2
	9	0.0	0.0
	10	3.3	3.3
	11	0.2	0.4
	12	3.9	1.8
	13	3.9	1.8
	14	5.1	5.1
	15	5.1	5.1
	16	3.6	3.3
	17	0.0	0.0
	18	0.0	0.0
	19	3.2	3.0
	20	3.2	3.2
	21	2.9	2.5
	22	0.5	4.5
	23	0.0	0.7
	24	3.0	4.0
	25	2.2	2.2
	26	5.1	4.1
	27	2.3	3.7
	28	2.3	3.7
	29	4.9	5.0
	30	NC	NC
	31	3.4	3.4
	32	2.3	2.3
	33	2.9	0.0
	34	2.6	2.3
	35	2.5	2.5
	36	2.9	2.8
	37	NC	NC
	38	2.9	2.8
	39	2.6	2.4
	40	1.7	1.1
	41	NC	NC
	42	3.5	0.7
	43	0.0	0.0
	44	2.3	2.3
	45	NC	NC
	46	2.7	2.7
	47	NC	NC
	48	0.0	0.0
	49	1.5	1.4
	50	3.4	3.6
	51	0.0	0.0
	52	0.0	0.0
	53	0.0	0.0
	54	5.0	5.0
	55	5.5	0.0
	56	1.2	0.0
	57	1.6	1.6
	58	3.0	2.9
	59	1.7	1.6
	60	2.1	2.3
IC22	1	8.9	9.0
	2	0.0	0.0
	3	5.0	5.0
IC23	1	0.0	3.2
	2	0.4	2.6
	3	0.0	3.5
	4	0.2	5.0
	5	—	3.3
	6	0.2	3.8
	7	0.2	3.0
	8	0.2	1.9
	9	0.2	1.9
	10	0.0	2.0
	11	0.0	3.3
	12	0.0	0.0
	13	0.0	1.9
	14	0.0	2.1
IC24	1	0.2	4.0
	2	0.9	3.8
	3	0.0	2.5
	4	0.0	2.5
	5	0.0	0.0
	6	0.0	2.5
	7	0.0	0.0
	8	0.0	2.5
IC25	1	5.0	5.0
	2	1.2	4.0
	3	2.5	2.5
	4	2.6	2.6
	5	0.0	0.0
	6	2.6	2.6
	7	0.0	0.0
	8	2.6	2.6
IC26	1	Not measured	
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
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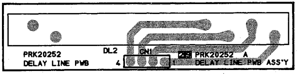
	37		
	38		
	39		
	40		
	41		
	42		
	43		
	44		
	45		
	46		
	47		
	48		
IC30	1	3.6	3.6
	2	0.0	0.0
	3	3.5	3.7
	4	NC	NC
	5	NC	NC
	6	0.0	4.3
	7	3.8	4.2
	8	5.1	5.2
	9	2.4	2.4
TRANSISTOR			
Q1	B	5.4	5.4
	C	0.0	0.0
	E	6.0	6.0
Q2	B	0.2	4.7
	C	5.3	0.0
	E	0.0	0.0
Q3	B	5.2	5.2
	C	3.7	3.7
	E	5.1	5.1
Q4	B	4.4	4.4
	C	5.2	5.2
	E	3.8	3.8
Q5	B	5.0	5.0
	C	0.0	0.0
	E	5.6	5.6

— DL BOARD —



A B C D E F G H

V I D E O

SYMBOL No.		REC	PB
Q6	B C E	1.7 0.0 2.3	1.6 0.0 2.2
Q7	B C E	3.9 8.1 3.3	3.9 8.8 3.3
Q8	B C E	3.9 5.5 3.3	3.9 5.5 3.3
Q9	B C E	5.5 8.8 4.9	5.5 8.8 4.9
Q10	B C E	4.9 7.8 4.2	4.9 7.8 4.2
Q11	B C E	1.7 4.2 1.0	1.7 4.2 1.0
Q12	B C E	4.0 8.8 3.3	4.0 8.8 3.3
Q13	B C E	3.9 5.5 3.3	0.0 5.5 3.3
Q14	B C E	5.4 8.8 4.9	5.5 8.8 4.9
Q15	B C E	4.9 7.8 4.2	4.9 7.8 4.2
Q16	B C E	1.7 4.2 1.0	1.7 4.2 1.0
Q17	B C E	5.1 0.0 0.0	0.0 8.9 0.0
Q18	B C E	8.1 8.1 8.9	9.0 0.1 9.0
Q19	B C E	5.0 0.0 0.0	0.0 5.2 0.0
Q20	B C E	4.4 5.1 5.2	5.2 5.4 5.2
Q21	B C E	0.2 5.2 0.0	4.7 0.0 0.0
Q22	B C E	5.2 0.2 5.2	4.4 5.1 5.2
Q23	B C E	5.2 0.0 5.2	5.2 0.0 5.2
Q24	B C E	0.0 7.5 0.0	0.0 7.5 0.0
Q25	B C E	7.5 0.0 0.0	7.5 0.0 0.0
Q26	B C E	8.2 8.9 9.1	8.3 9.0 9.1
Q27	B C E	0.0 0.0 0.0	0.0 9.1 0.0

SYMBOL No.		REC	PB
Q28	B C E	5.0 0.0 0.0	0.0 9.1 0.0
Q29	B C E	5.2 0.0 5.8	5.2 0.0 5.8
Q30	B C E	1.5 0.0 2.2	1.5 0.0 2.2
Q31	B C E	2.2 0.0 2.8	2.2 0.0 2.8
Q32	B C E	5.1 0.0 5.7	5.1 0.0 5.8
Q33	B C E	1.6 0.0 2.3	1.6 0.0 2.2
Q34	B C E	5.2 9.0 4.6	5.3 9.0 4.6
Q35	B C E	4.3 0.0 4.9	4.3 0.0 4.9
Q36	B C E	6.0 4.2 6.7	6.0 4.2 6.7
Q37	B C E	3.6 6.0 3.0	3.6 6.1 3.0
Q38	B C E	6.5 9.0 5.9	6.5 9.0 5.9
Q39	B C E	5.7 9.0 5.1	5.8 9.0 5.1
Q40	B C E	3.2 6.5 2.5	3.2 6.5 2.5
Q41	B C E	6.5 3.5 7.1	6.5 3.5 7.1
Q42	B C E	3.5 0.0 4.1	3.5 0.0 0.0
Q43	B C E	4.6 0.0 5.0	6.5 0.0 5.0
Q44	B C E	0.4 5.1 2.8	0.4 5.2 2.8
Q45	G D S	2.8 0.4 0.0	2.8 0.4 0.0
Q46	G D S	0.4 4.7 0.0	0.4 4.7 0.0
Q47	G D S	4.7 0.4 0.0	4.7 0.4 0.0
Q48	B C E	0.4 5.1 0.3	0.4 5.2 0.3
Q49	B C E	2.8 8.9 2.2	2.8 8.9 2.2

SYMBOL No.		REC	PB
Q50	B C E	2.2 6.1 1.6	2.2 6.1 1.6
Q51	B C E	6.1 3.9 6.7	6.1 3.9 6.7
Q52	B C E	3.9 0.0 4.6	3.9 0.0 4.6
Q53	B C E	4.3 8.9 3.6	4.3 8.9 3.7
Q54	B C E	0.1 0.2 0.0	3.5 5.0 2.9
Q55	B C E	0.1 0.0 0.2	3.3 0.8 4.0
Q56	B C E	0.1 0.2 0.0	3.6 5.0 3.0
Q57	B C E	0.1 0.0 0.0	3.3 0.8 4.0
Q58	B C E	0.0 0.0 0.2	1.4 0.0 2.1
Q59	B C E	0.0 0.2 0.0	2.1 3.5 1.4
Q60	B C E	0.1 0.2 0.0	3.5 5.0 2.8
Q61	B C E	0.0 0.0 0.2	0.6 0.0 1.2
Q62	B C E	0.2 0.0 0.2	3.9 0.7 4.5
Q63	B C E	0.0 0.2 0.0	1.8 3.9 1.2
Q64	B C E	0.0 0.2 0.5	2.5 5.0 2.9
Q65	B C E	0.0 0.2 0.0	1.7 5.0 1.1
Q66	B C E	0.2 0.2 0.0	4.0 5.0 3.4
Q67	B C E	0.0 0.2 0.0	1.7 3.8 1.1
Q68	B C E	0.0 0.0 0.2	2.8 0.0 3.4
Q69	B C E	0.0 0.0 0.2	3.4 2.8 4.0
Q72	B C E	0.1 0.2 0.0	4.0 5.0 3.4
Q73	B C E	0.0 0.2 0.0	1.6 5.0 1.0

SYMBOL No.		REC	PB
Q74	B C E	0.0 0.0 0.2	2.8 1.6 3.4
Q75	B C E	0.0 8.9 0.0	0.0 9.0 0.0
Q76	B C E	8.9 0.0 8.9	9.0 0.0 9.0
Q77	B C E	0.0 0.0 0.0	0.1 2.7 0.0
Q78	B C E	0.0 3.1 5.2	0.0 3.2 5.2
Q79	B C E	2.7 7.9 2.1	2.7 8.0 2.2
Q80	B C E	7.9 3.9 8.5	8.0 4.0 8.6
Q81	B C E	3.9 8.7 3.3	4.0 8.8 3.4
Q82	B C E	4.0 8.7 3.4	4.1 8.8 3.4
Q83	G D S	0.2 4.1 0.0	3.8 0.0 0.0
Q84	G D S	4.1 0.0 0.0	0.0 0.2 0.0
Q85	G D S	0.2 0.4 0.0	3.7 0.0 0.0
Q86	B C E	0.0 0.0 0.0	0.0 0.0 0.0
Q87	B C E	0.0 8.8 3.1	3.8 8.9 3.2
Q88	B C E	2.0 8.8 1.4	2.1 8.9 1.4
Q89	B C E	1.8 8.0 1.2	1.8 8.1 1.2
Q90	B C E	8.0 4.1 8.6	8.1 4.3 8.7
Q91	B C E	6.5 1.6 7.1	6.6 1.6 7.2
Q92	B C E	7.1 8.7 6.5	7.2 8.8 6.6
Q93	B C E	3.4 8.7 2.8	3.5 8.8 2.8
Q94	B C E	6.0 0.0 6.6	6.1 0.0 6.7
Q95	B C E	7.1 8.7 6.4	7.2 8.8 6.6

SYMBOL No.		REC	PB
Q96	B C E	8.0 8.7 7.4	8.1 8.8 7.5
Q97	B C E	5.1 8.7 4.5	5.2 8.8 4.6
Q98	B C E	4.5 0.0 5.1	4.6 0.0 5.2
Q99	B C E	5.6 8.7 5.0	5.7 8.8 5.0
Q100	B C E	2.1 7.9 1.6	2.2 7.8 1.6
Q101	B C E	7.9 6.0 8.5	8.0 6.2 8.6
Q102	B C E	6.0 2.1 6.7	6.2 2.1 6.8
Q103	B C E	6.7 8.8 6.1	6.8 8.9 6.2
Q104	B C E	4.5 0.0 5.1	4.6 0.0 5.2
Q105	B C E	1.5 0.0 2.1	1.5 0.0 2.1
Q106	B C E	0.0 8.8 1.5	2.1 8.9 1.5
Q107	B C E	5.1 0.0 0.0	0.0 4.3 0.0
Q108	B C E	2.9 5.1 2.3	2.5 5.1 1.9
Q109	B C E	5.0 0.0 0.0	0.0 4.3 0.0
Q110	B C E	4.5 0.0 0.0	4.4 0.0 0.0
Q111	B C E	0.0 3.2 0.0	0.0 3.2 0.0
Q112	B C E	2.9 4.9 5.0	3.3 5.0 5.0
Q113	B C E	3.4 4.9 5.0	3.5 5.0 5.0
Q114	B C E	0.0 0.0 0.0	0.0 0.0 0.0
Q115	B C E	0.0 2.6 1.4	0.0 2.6 1.5
Q116	B C E	0.0 2.4 1.4	0.0 2.4 1.5
Q117	B C E	0.0 0.6 0.0	0.0 0.1 0.0

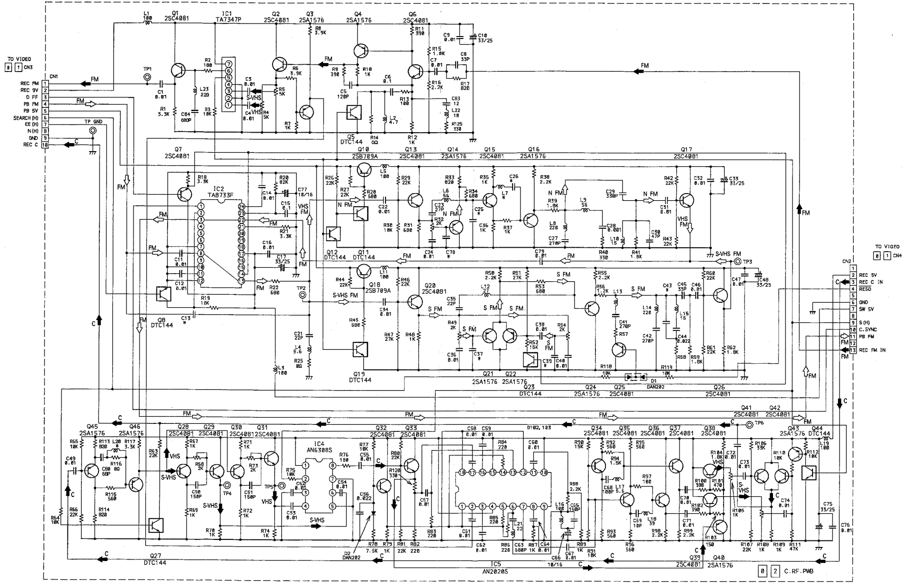
SYMBOL No.		REC	PB
Q118	B C E	4.6 0.0 0.0	4.4 0.0 0.0
Q119	B C E	1.7 0.0 2.4	0.0 0.0 0.0
Q120	B C E	0.2 3.6 0.0	4.7 0.0 0.0
Q121	B C E	2.5 5.0 1.8	2.5 5.0 1.9
Q122	B C E	4.1 0.0 0.0	4.1 0.0 0.0
Q123	B C E	4.5 0.0 0.0	4.4 0.0 0.0
Q124	B C E	0.0 2.5 0.0	0.0 2.5 0.0
Q125	B C E	4.6 0.0 0.0	4.4 0.0 0.0
Q126	B C E	0.0 4.9 0.0	0.0 4.9 0.0
Q127	B C E	0.0 3.6 0.0	0.0 3.5 0.0
Q128	B C E	3.8 0.0 0.0	3.6 0.0 0.0
Q129	B C E	0.0 — 0.0	0.0 0.0 0.0
Q130	B C E	0.0 5.2 5.2	0.0 5.0 5.1
Q131	B C E	4.3 0.0 0.0	4.4 0.0 0.0
Q132	B C E	4.3 0.0 0.0	4.4 0.0 0.0
Q133	B C E	0.0 0.0 0.0	0.0 0.0 0.0
Q134	B C E	4.4 5.2 3.8	4.9 5.2 4.3
Q135	B C E	0.2 0.0 0.8	2.8 0.0 3.4
Q136	B C E	0.6 0.0 0.0	0.0 0.0 0.0
Q137	B C E	0.6 5.1 5.2	5.2 -0.2 5.2
Q138	B C E	Not measured	
Q139	B C E	0.0 0.0 0.2	2.2 0.0 2.8

SYMBOL No.		REC	PB
Q140	B C E	0.2 0.0 0.2	4.3 2.2 4.9
Q141	B C E	0.0 0.2 0.0	1.5 4.3 1.0
Q142	B C E	0.0 0.0 0.0	0.0 0.0 0.0
Q143	B C E	0.4 5.2 0.3	0.5 5.2 0.3
Q144	B C E	0.0 0.2 0.0	0.0 3.8 0.0
Q145	B C E	0.0 0.0 0.2	1.5 0.0 2.1
Q146	B C E	0.2 0.0 0.2	3.1 1.2 3.7
Q147	B C E	0.0 0.2 0.0	2.4 3.1 1.8
Q148	B C E	0.2 0.2 0.2	3.2 0.0 3.8
Q149	B C E	0.0 0.2 0.0	2.4 3.2 1.8
Q151	B C E	0.1 0.2 0.0	3.7 4.9 3.1
Q152	B C E	0.0 0.8 0.0	0.0 5.0 0.0
Q153	B C E	Not measured	
Q154	B C E	Not measured	
Q155	B C E	Not measured	
Q156	B C E	Not measured	
Q157	B C E	Not measured	
Q158	B C E	Not measured	
Q159	B C E	0.7 0.0 0.0	0.6 0.0 0.0
Q160	B C E	2.5 5.0 1.9	2.5 5.0 1.9
Q161	B C E	8.3 8.8 7.7	8.3 8.8 7.7
Q200	B C E	1.6 0.0 2.3	1.6 0.0 2.2

SYMBOL No.		REC	PB
Q201	B C E	4.8 8.8 4.2	4.9 8.8 4.3
Q202	B C E	2.4 5.0 1.8	2.4 5.0 1.8
Q203	B C E	2.4 5.0 1.8	2.4 5.0 1.8
Q206	B C E	0.0 0.3 0.0	0.0 — 0.0
Q207	B C E	0.3 4.5 0.0	0.3 4.5 0.0
Q208	B C E	5.0 5.0 4.4	5.0 5.0 4.4
Q209	B C E	0.2 0.0 0.9	1.2 0.0 1.9
Q210	B C E	Not measured	
Q211	B C E	1.1 3.6 0.5	1.1 3.6 0.5
Q212	B C E	Not measured	
Q213	B C E	Not measured	
Q214	G D S	0.0 5.1 0.0	3.6 0.0 0.0
Q215	B C E	0.5 0.0 1.2	0.5 0.0 1.2
Q216	B C E	0.6 5.1 2.7	0.4 5.2 2.8
Q217	G D S	2.7 0.6 0.0	2.8 0.4 0.0
Q218	G D S	0.6 4.7 0.0	0.4 4.7 0.0
Q219	G D S	4.7 0.4 0.0	4.7 0.4 0.0
Q220	B C E	0.4 5.1 0.3	0.4 5.2 0.3
Q221	B C E	2.5 5.0 1.9	2.5 5.0 1.9

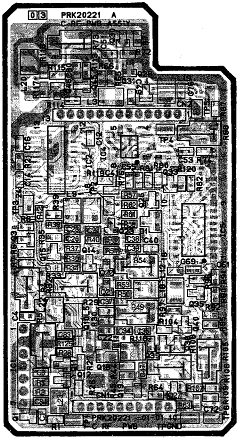
SYMBOL No.		REC	PB
CONNECTOR			
CN1	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	— 5.0 0.0 3.2 3.3 0.0 0.0 4.7 4.7 5.1 0.0 4.8 0.0 5.0 0.0 0.0 0.0 0.0 0.0 5.2 9.1 0.0 8.9 5.2 0.0 3.6 3.6 3.5 0.0 0.0	0.2 4.9 0.0 1.8 1.7 0.0 0.0 4.8 4.8 0.0 0.0 4.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5.2 9.1 0.0 9.0 5.2 0.0 3.8 0.0 0.0 8.8 0.0
CN3	1 2 3 4 5 6 7 8 9 10	0.1 8.8 0.0 3.2 0.2 0.0 5.0 0.0 0.0 5.0	-0.3 0.1 — 0.0 5.1 0.0 0.0 0.0 0.0 4.9
CN4	1 2 3 4 5 6 7 8 9 10 11 12 13	NC 5.1 3.0 5.0 0.0 0.0 5.2 NC 4.5 0.4 4.3 NC 2.1	NC 0.4 3.0 0.0 NC 0.0 5.2 NC 4.3 0.5 2.7 NC 0.4
CN7	1 2 3 4 5 6 7 8 9 10	NC 5.2 1.0 0.0 0.0 8.9 4.5 5.7 0.3 NC	NC 5.2 1.0 0.0 0.0 9.0 4.3 5.8 0.3 NC
CN8	1 2 3 4 5 6 7 8 9	NC NC NC 4.5 2.3 0.0 5.1 2.1 NC	NC NC NC 4.3 1.9 0.0 0.4 0.4 NC

4.9 C. RF SCHEMATIC DIAGRAM

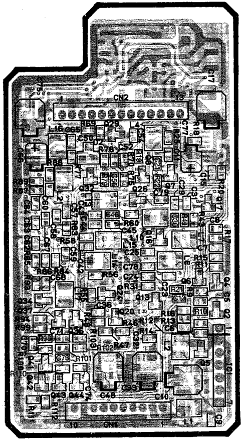

TO VIDEO
8 1 CN3
CN1
REC FM 1
REC 9V 2
D FF 3
PB FM 4
PB 5V 5
SEARCH (H) 6
EE (H) 7
N (H) 8
GND 9
REC C 10
L1 100
Q1 2SC4081
IC1 TA7347P
Q2 2SC4081
Q3 2SA1576
Q4 2SA1576
Q6 2SC4081
R8 3.9K
R11 390
C9 0.01
C10 33/25
R15 1.8K
C8 33P
C7 0.01
R17 820
R16 2.2K
C83 12
L22 18
R125 330
R2 180
R6 3.9K
R9 390
R10 1K
C6 0.1
C5 120P
R13 100
L2 4.7
R14 0Ω
R12 1K
Q5 DTC144
TP1
C1 0.01
L23 220
C3 0.01
R5 5K
C4 0.01
R4 5K
R7 1K
R1 3.3K
C84 680P
R3 10K
TP GND
S-VHS
VHS
FM
C
Q7 2SC4081
IC2 TA8733F
R18 3.3K
R20 82K
C14 0.01
C77 10/16
C15 0.1
R21 3.3K
C16 0.01
C17 33/25
C11 0.01
C12 0.01
R19 12K
C13 *
R22 680
TP2
Q8 DTC144
Q10 2SB709A
Q13 2SC4081
Q14 2SA1576
Q15 2SC4081
Q16 2SA1576
Q17 2SC4081
L5 100
R26 22K
R27 22K
R28 680
R29 22K
C22 0.01
R30 10K
R31 680
R33 820
R34 680
L6 56
C23 27P
R32 2K
C24 0.01
C78 *
R35 1K
C26 *
L7 *
C25 *
C36 1K
R37 1K
R38 2.2K
N FM
R39 1.8K
L9 56
L8 220
C27 270P
C28 0.001
L10 15
C29 330P
C31 0.01
C30 47P
R40 330
R41 1.8K
R42 22K
C32 0.01
C33 33/25
R43 22K
C79 0.01
S-VHS FM
TP3
Q12 DTC144
Q11 DTC144
Q18 2SB709A
L11 100
R44 22K
R46 22K
Q20 2SC4081
C34 0.01
R45 680
R47 27K
R48 1K
C21 22P
L4 5.6
R25 0Ω
L3 100
Q19 DTC144
C35 22P
L12 27
R50 2.2K
R51 27K
R53 680
S FM
R49 2K
C36 0.01
C37 *
C38 0.01
R54 2K
R52 15K
C39 *
C40 0.01
R55 2.2K
R56 1.2K
L13
C41 270P
R57
L14 220
C42 270P
C43 *
C45 33P
C46 0.01
L15 15
C44 0.022
R58
R59 1.8K
R60 22K
C47 0.01
C48 33/25
R61 22K
R62 1.8K
R118 10K
R119 10K
D1 DAN202
Q21 2SA1576
Q22 2SA1576
Q23 DTC144
Q24 2SA1576
Q25 2SC4081
Q26 2SC4081
TO VIDEO
8 1 CN4
CN2
1
2 REC 5V
3 REC C IN
4 RESO
5
6 GND
7 SW 5V
8
9 S (H)
10 C.SYNC
11 PB FM
12
13 REC FM IN
Q41 2SC4081
Q42 2SC4081
TP6
Q45 2SA1576
Q46 2SA1576
Q28 2SC4081
Q29 2SC4081
Q30 2SC4081
Q31 2SC4081
Q32 2SC4081
Q33 2SC4081
D102, 103
Q34 2SC4081
Q35 2SC4081
Q36 2SC4081
Q37 2SC4081
Q38 2SC4081
Q43 2SA1576
Q44 DTC144
R65 10K
R113 820
L20 *
R117 3.3K
C49 0.01
C80 68P
R116 0Ω
R115 560
R66 22K
R114 820
R64 10K
R63 22K
R67 1K
R68 2K
C50 150P
R69 1K
R70 1K
TP4
R71 1K
R73 2K
C51 150P
R72 1K
R74 1K
TP5
IC4 AN6308S
R75 10K
C52 0.01
C53 0.01
C54 0.01
R76 180
R77 10K
C55 0.01
C56 0.022
R80 22K
R120 330
C57 0.01
R78 7.5K
R79 1K
R81 22K
R82 220
R83 220
D2 DAN202
Q27 DTC144
C58 0.01
C59 0.01
R84 220
C60 0.01
C61 0.01
C62 0.01
R85 220
C21 22
R86 220
C63 680P
R87 1K
C64 0.01
R88 2.2K
L16 100
C65 150P
C66 10/16
C67 0.01
R89 1K
R91 10K
IC5 AN2020S
R90 15K
R92 560
R94 1.5K
R95 560
C68 100P
L17 5.6
R97 100
C59 10P
L18 39
R93 560
R96 560
R98 2.2K
C70 0.01
C71 0.01
R99 2.2K
R104 1.8K
C72 0.01
R100 390
R101 470
R102 390
R103 150
C73 0.01
R106 33K
R110 10K
R112 10K
L19 100
C74 0.01
R105 1K
C75 33/25
C76 0.01
R107 22K
R108 1K
R109 1K
R111 47K
Q39 2SC4081
Q40 2SA1576
0 2 C.RF.PWB

4.10 C. RF CIRCUIT BOARD

— SOLDER SIDE —



— PARTS SIDE —



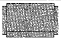
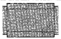
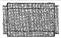
C RF <02>

SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	6.0	—
	2	0.0	0.0
	3	6.0	—
	4	0.0	0.0
	5	5.0	0.8
	6	5.2	0.0
	7	8.8	0.1
IC2	1	0.4	0.5
	2	0.0	4.3
	3	4.3	2.7
	4	—	—
	5	—	—
	6	—	—
	7	0.0	0.0
	8	2.6	3.6
	9	—	—
	10	0.0	0.0
	11	2.6	3.6
	12	0.0	0.0
	13	4.6	2.2
	14	4.6	2.2
	15	—	—
	16	—	—
	17	5.2	5.1
	18	—	—
	19	—	—
	20	—	—
	21	0.0	0.0
	22	2.9	3.4
	23	0.0	0.7
	24	2.9	3.4
IC4	1	4.9	0.4
	2	3.8	1.2
	3	2.4	0.0
	4	2.5	0.0
	5	0.0	0.0
	6	2.5	0.0
	7	0.0	0.0
	8	2.5	0.0
IC5	1	1.8	0.0
	2	1.8	0.0
	3	1.8	0.0
	4	4.9	0.4
	5	1.8	0.0
	6	1.8	0.0
	7	0.0	0.0
	8	2.1	—
	9	0.0	0.0
	10	4.9	0.4
	11	2.0	0.2
	12	0.0	0.0
	13	1.8	0.0
	14	1.8	0.0
	15	4.9	0.4
	16	1.8	0.0
	17	1.8	0.0
	18	0.0	0.0
TRANSISTOR			
Q1	B	5.2	0.0
	C	8.8	0.0
	E	4.6	0.0

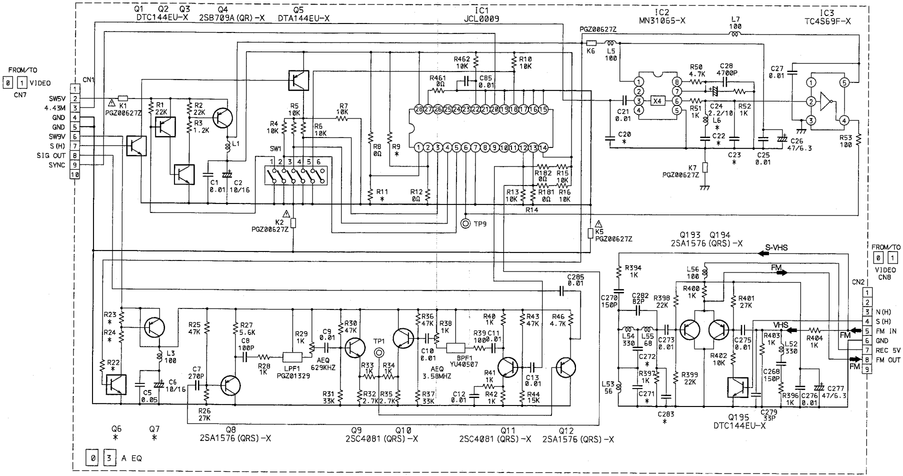
SYMBOL	No.	REC	PB
Q2	B C E	Not measured	
Q3	B	1.2	0.0
	C	0.0	0.0
	E	1.9	0.0
Q4	B C E	Not measured	
Q5	B C E	Not measured	
Q6	B C E	Not measured	
Q7	B C E	Not measured	
Q8	B C E	Not measured	
Q10	B	0.2	5.0
	C	0.0	0.0
	E	0.2	5.1
Q11	B	0.0	0.0
	C	0.2	5.0
	E	0.0	0.0
Q12	B	4.5	4.4
	C	0.0	0.0
	E	0.0	0.0
Q13	B C E	Not measured	
Q14	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q15	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q16	B C E	Not measured	
Q17	B C E	Not measured	
Q18	B	0.0	4.2
	C	0.0	5.0
	E	0.0	5.1
Q19	B	4.5	4.3
	C	0.0	0.0
	E	0.0	0.0

SYMBOL	No.	REC	PB
Q20	B C E	Not measured	
Q21	B	0.0	2.1
	C	0.0	0.0
	E	0.0	2.6
Q22	B	0.0	3.5
	C	0.0	0.0
	E	0.0	2.6
Q23	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q24	B C E	Not measured	
Q25	B	0.3	0.0
	C	0.0	0.0
	E	0.0	0.0
Q26	B C E	Not measured	
Q27	B	0.0	0.0
	C	5.0	4.9
	E	0.0	0.0
Q28	B	1.5	0.4
	C	4.0	0.4
	E	0.9	0.0
Q29	B C E	Not measured	
Q30	B	1.5	0.4
	C	4.0	0.4
	E	0.9	0.0
Q31	B	4.0	0.4
	C	4.9	0.4
	E	3.3	0.0
Q32	B C E	Not measured	
Q33	B	2.4	0.0
	C	4.9	0.4
	E	1.7	0.0
Q34	B C E	Not measured	
Q35	B	1.9	0.2
	C	3.6	0.4
	E	1.3	0.0
Q36	B C E	Not measured	

SYMBOL	No.	REC	PB
Q37	B C E	Not measured	
Q38	B	2.4	0.2
	C	4.9	0.4
	E	1.8	0.0
Q39	B	2.4	0.4
	C	4.9	0.4
	E	1.8	0.4
Q40	B	1.7	0.0
	C	0.0	0.0
	E	2.4	0.4
Q41	B C E	Not measured	
Q42	B C E	Not measured	
Q43	B C E	Not measured	
Q44	B C E	Not measured	
Q45	B	3.4	0.3
	C	0.8	0.0
	E	4.0	0.4
Q46	B	0.9	0.0
	C	0.0	0.0
	E	1.5	0.4
CONNECTOR			
CN1	1	0.1	-0.3
	2	8.8	0.1
	3	0.0	—
	4	3.2	0.0
	5	0.2	5.1
	6	0.0	0.0
	7	5.0	0.0
	8	0.0	0.0
	9	0.0	0.0
	10	5.0	4.9
CN2	1	NC	NC
	2	5.1	0.4
	3	3.0	3.0
	4	5.0	0.0
	5	NC	NC
	6	0.0	0.0
	7	5.2	5.2
	8	NC	NC
	9	4.5	4.3
	10	0.4	0.5
	11	4.3	2.7
	12	NC	NC
	13	2.1	0.4

TP1	TP2	TP3	TP4	TP5	TP6
					
V-rate REC 0.22 Vp-p	V-rate PB 0.4 Vp-p	V-rate PB 0.3 Vp-p	H-rate REC 1.1 Vp-p	H-rate REC 1.1 Vp-p	H-rate REC 0.18 Vp-p

4.11 AUTO EQ SCHEMATIC DIAGRAM

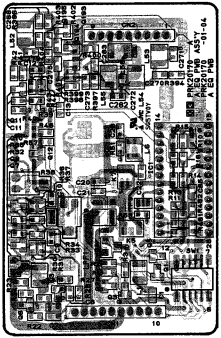

FROM/TO
0 1 VIDEO
CN7
CN1
SW5V 2
4.43M 3
GND 4
GND 5
SW9V 6
S(H) 7
SIG OUT 8
SYNC 9
10
Q1 Q2 Q3
DTC144EU-X
Q4
2SB709A(QR)-X
Q5
DTA144EU-X
IC1
JCL0009
IC2
MN31065-X
IC3
TC4S69F-X
K1 PGZ00627Z
R1 22K
R2 22K
R3 1.2K
L1
C1 0.01
C2 10/16
R4 10K
R5 10K
R6 10K
R7 10K
SW1
1 2 3 4 5 6
K2 PGZ00627Z
R8 0Ω
R9 *
R11 *
R12 0Ω
R461 0Ω
R462 10K
C85 0.01
R10 10K
R13 10K
R181 0Ω
R182 0Ω
R15 10K
R16 10K
R14
TP9
K5 PGZ00627Z
PGZ00627Z
K6
L5 100
L7 100
R50 4.7K
C28 4700P
C21 0.01
X4
R51 1K
C24 2.2/10
L6 *
R52 1K
C20 *
C22 *
C23 *
C25 0.01
C26 47/6.3
C27 0.01
K7 PGZ00627Z
R53 100
Q193 Q194
2SA1576(QRS)-X
S-VHS
FM
VHS
FROM/TO
0 1
VIDEO
CN8
CN2
1
2
3 N(H)
4 S(H)
5 FM IN
6 GND
7 REC 5V
8 FM OUT
9
R394 1K
C270 150P
C282 82P
R398 22K
L56 100
R400 1K
R401 27K
L54 330
L55 68
C273 0.01
C272 *
R397 1K
C271 *
L53 56
R399 22K
C283 *
C275 0.01
R403 1K
L52 330
R404 1K
R402 10K
C268 150P
R396 1K
C276 0.01
C277 47/6.3
C279 33P
Q195
DTC144EU-X
C285 0.01
R23 *
R24 *
R22 *
L3 100
C5 0.05
C6 10/16
R25 47K
R27 5.6K
C8 100P
R28 1K
LPF1 PGZ01329
R29 1K
C9 0.01
AEQ 629KHZ
C7 270P
R26 27K
R30 47K
TP1
R31 33K
R33 1K
R32 2.7K
R34 1K
R35 2.7K
R36 47K
R38 1K
C10 0.01
BPF1 YU40507
AEQ 3.58MHZ
R37 33K
R39 1000
C11 0.01
R40 1K
R41 1K
C12 0.01
R42 1K
R43 47K
C13 0.01
R44 15K
R46 4.7K
Q6 *
Q7 *
Q8
2SA1576(QRS)-X
Q9 Q10
2SC4081(QRS)-X
Q11
2SC4081(QRS)-X
Q12
2SA1576(QRS)-X
0 3 A EQ

4.12 AUTO EQ CIRCUIT BOARD

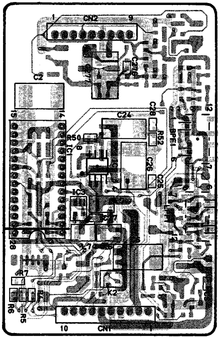
A EQ <03>

SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	5.0	5.0
	2	0.0	0.0
	3	4.9	4.9
	4	0.0	0.0
	5	0.0	0.0
	6	1.7	1.6
	7	0.0	0.0
	8	NC	NC
	9	NC	NC
	10	NC	NC
	11	NC	NC
	12	2.5	2.5
	13	2.5	2.5
	14	5.0	5.0
	15	0.0	0.0
	16	0.0	0.0
	17	0.0	0.0
	18	5.0	5.0
	19	0.0	0.0
	20	0.3	0.3
	21	0.0	0.0
	22	5.0	5.0
	23	NC	NC
	24	NC	NC
	25	NC	NC
	26	NC	NC
	27	0.0	0.0
	28	5.0	5.0
IC2	1 2 3 4 5 6 7 8	Not measured	
IC3	1 2 3 4 5	Not measured	
TRANSISTOR			
Q1	B	4.5	4.3
	C	0.0	0.0
	E	0.0	0.0
Q2	B	0.0	0.0
	C	5.2	5.2
	E	5.2	5.2
Q3	B	5.2	5.2
	C	0.0	0.0
	E	0.0	0.0
Q4	B	4.3	4.3
	C	5.1	5.1
	E	5.2	5.2
Q5	B	0.0	0.0
	C	4.9	4.9
	E	5.0	5.0
Q8	B	3.3	3.3
	C	0.0	0.0
	E	3.9	3.9
Q9	B	3.6	0.0
	C	8.8	8.9
	E	3.0	3.1
Q10	B	3.6	3.7
	C	8.8	8.9
	E	3.0	3.1
Q11	B	2.1	2.1
	C	7.4	7.4
	E	1.4	1.5
Q12	B	3.0	3.1
	C	0.0	0.0
	E	3.6	3.7
Q193	B	2.5	0.2
	C	0.0	0.0
	E	2.1	0.4
Q194	B	1.5	0.1
	C	0.0	0.0
	E	2.1	0.4
Q195	B	4.5	4.3
	C	0.0	0.0
	E	0.0	0.0
CONNECTOR			
CN1	1	NC	NC
	2	5.2	5.2
	3	1.0	1.0
	4	0.0	0.0
	5	0.0	0.0
	6	8.9	9.0
	7	4.5	4.3
	8	5.7	5.8
	9	0.3	0.3
	10	NC	NC
CN2	1	NC	NC
	2	NC	NC
	3	NC	NC
	4	4.5	4.3
	5	2.3	1.9
	6	0.0	0.0
	7	5.1	0.4
	8	2.1	0.4
	9	NC	NC

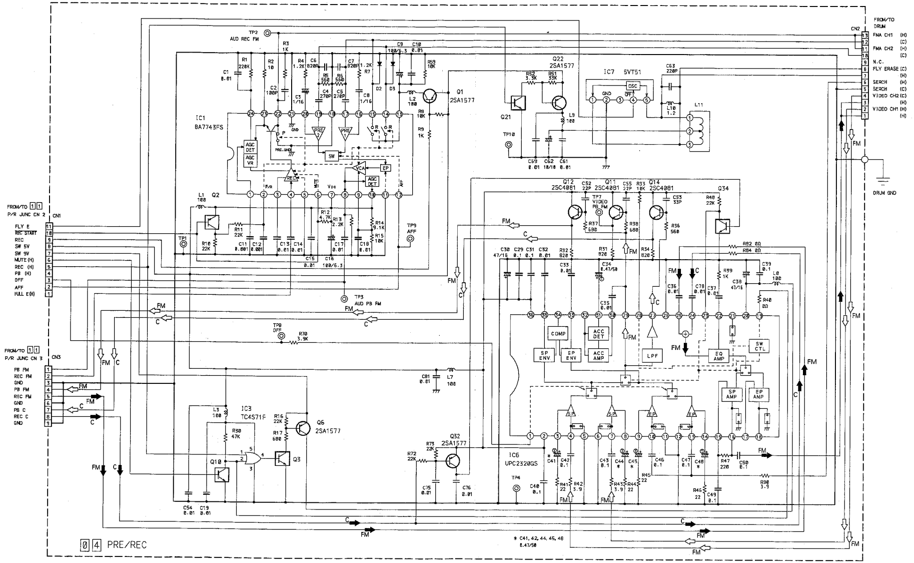
— SOLDER SIDE —


CN2
IC1
SW1
K5
K7
C282
C270
R394
R399
R398
R397
C279
L55
L54
L53
L52
C272
C271
R400
C283
C288
R396
R402
R403
Q193
C11
R38
R37
R36
R34
R33
Q12
C20
C21
R11
R15
R16
R22
R23
Q3
Q1
14
15
28
12
9
10
PRK20170-A
A EQ PWB ASS'Y
-01-04
PRK20170
A EQ PWB
SG5TV0Y

— PARTS SIDE —


CN2
1
9
C2
C276
C24
C28
C26
C25
R50
R52
IC1
IC3
15
14
28
R7
R6
R5
K2
10
CN1
1

4.13 PRE/REC SCHEMATIC DIAGRAM

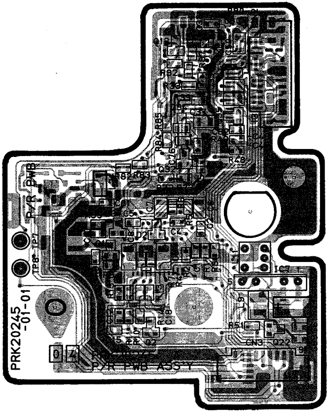

FROM/TO 1 1
P/R JUNC CN 2
CN1
FLY E
REC START
REC
SW 5V
SW 9V
MUTE (H)
REC (H)
PB (H)
DFF
AFF
FULL E(H)
FROM/TO 1 1
P/R JUNC CN 3
CN3
PB FM
REC FM
GND
PB FM
REC FM
GND
PB C
REC C
GND
TP2
AUD REC FM
TP1
TP3
AUD PB FM
TP8
DFF
TP9
AFF
TP4
TP7
VIDEO
PB FM
TP10
IC1
BA7743FS
AGC DET
AGC VR
PRE 2
PRE 1
SW
REC
VCA
EP
AGC DET
P/R
MUTE
Vcc
AFF
PRE.GND
GND
Q1
2SA1577
Q2
Q3
Q6
2SA1577
Q10
Q11
2SC4081
Q12
2SC4081
Q14
2SC4081
Q21
Q22
2SA1577
Q32
2SA1577
Q34
IC3
TC4S71F
IC6
UPC2320GS
IC7 SVT51
OSC
GND
OFF
COMP
ACC DET
SP ENV
EP ENV
ACC AMP
LPF
EQ AMP
SW CTL
SP AMP
EP AMP
SP
EP
R1 220K
R2 10
R3 1K
R4 1.2K
R5 560
R6 560
R7 1.2K
R8 10K
R9 1K
R10 22K
R11 22K
R12 4.7K
R13 2.2K
R14 9.1K
R15 10K
R16 22K
R17 680
R30 47K
R31 820
R32 820
R33 10K
R34 820
R36 560
R37 680
R38 680
R39 1K
R40 0Ω
R41 22
R42 3.9
R43 3.9
R44 22
R45 22
R46 22
R47 220
R48 22K
R51 33K
R52 3.3K
R59 10K
R70 3.9K
R72 22K
R73 22K
R80 3.9
R82 0Ω
R84 0Ω
C1 0.01
C2 100P
C3 1/16
C4 270P
C5 270P
C6 820P
C7 820P
C8 1/16
C9 100/6.3
C10 0.01
C11 0.001
C12 0.001
C13 0.01
C14 0.01
C15 0.01
C16 100/6.3
C17 0.01
C18 0.01
C19 0.01
C29 0.1
C30 47/16
C31 0.1
C32 0.01
C33 0.01
C34 0.47/50
C35 0.01
C36 0.01
C37 0.01
C38 47/16
C39 0.1
C40 0.1
C41
C42 0.1
C43 0.1
C44
C45
C46 0.1
C47 0.1
C48
C49 0.1
C50 0.1
C52 22P
C53 33P
C54 0.01
C55 22P
C59 0.01
C61 0.01
C62 10/10
C63 220P
C75 0.01
C76 0.01
C78 0.01
C81 0.01
D2
D3
L1 100
L2 100
L3 100
L7 100
L8 100
L9 100
L10 1.2
L11
FM
C
CN2
FROM/TO DRUM
FMA CH1 (H)
(C)
FMA CH2 (H)
(C)
N.C.
FLY ERASE (C)
(H)
SERCH (H)
SERCH (C)
VIDEO CH2 (C)
(H)
VIDEO CH1 (H)
(H)
DRUM GND
* C41, 42, 44, 45, 48
0.47/50
0 4 PRE/REC

4.14 PRE/REC CIRCUIT BOARD

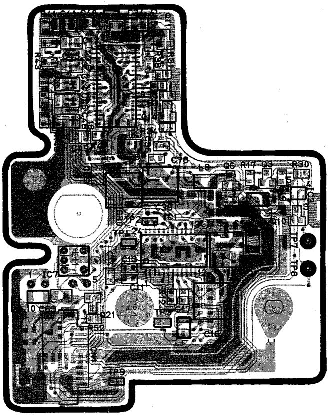
PRE/REC <04>

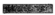
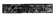
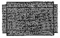
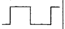
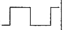
SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	1.3	1.4
	2	5.0	0.8
	3	1.4	0.6
	4	2.8	3.0
	5	0.0	0.0
	6	1.2	5.2
	7	5.0	5.1
	8	3.7	2.1
	9	2.6	2.7
	10	5.0	5.1
	11	0.0	0.0
	12	0.0	0.0
	13	4.5	—
	14	3.6	0.0
	15	3.6	0.0
	16	0.0	0.9
	17	0.0	0.7
	18	0.0	0.0
	19	0.0	0.7
	20	0.0	0.9
	21	0.0	0.0
	22	3.5	0.0
	23	0.6	0.0
	24	0.2	0.0
IC3	1	5.0	0.0
	2	2.2	0.0
	3	0.0	0.0
	4	5.1	0.0
	5	5.2	5.2
IC6	1	2.8	-0.2
	2	5.0	5.0
	3	1.2	1.7
	4	0.0	0.8
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.8
	8	1.1	1.7
	9	1.3	4.8
	10	0.0	0.0
	11	0.0	0.0
	12	0.0	0.0
	13	0.0	0.0
	14	1.3	0.0
	15	2.1	0.0
	16	4.2	0.0
	17	NC	NC
	18	NC	NC
	19	2.1	0.0
	20	8.4	0.0
	21	NC	NC
	22	3.2	0.0
	23	5.0	5.0
	24	5.3	0.0
	25	5.3	0.0
	26	0.0	0.0
	27	3.9	2.4
	28	5.0	5.0
	29	3.9	2.5
	30	2.9	3.0
	31	0.2	1.1
	32	NC	NC
	33	4.5	2.5
	34	NC	NC
	35	4.5	3.2
	36	5.0	5.0
IC7	1	5.2	—
	2	0.0	0.0
	3	NC	NC
	4	5.0	0.0
	5	4.8	—
TRANSISTOR			
Q1	B	0.0	5.3
	C	3.7	5.0
	E	0.0	5.2
Q2	B	1.2	5.2
	C	5.0	0.4
	E	5.0	5.1
Q3	B	5.2	0.0
	C	0.1	9.0
	E	0.0	0.0
Q6	B	8.2	9.0
	C	8.9	0.0
	E	8.9	9.0
Q10	B	0.0	5.1
	C	2.2	0.0
	E	0.0	0.0
Q11	B	3.9	2.4
	C	5.1	5.0
	E	3.3	0.0
Q12	B	3.9	2.7
	C	5.1	4.9
	E	3.3	2.1
Q14	B	4.0	2.4
	C	5.1	5.0
	E	3.3	1.8
Q21	B	5.0	0.0
	C	0.0	5.2
	E	0.0	0.0
Q22	B	4.5	5.2
	C	5.2	—
	E	5.2	5.2
Q32	B	-0.1	4.9
	C	0.0	0.0
	E	5.1	4.9
Q34	B	0.0	0.0
	C	5.1	4.9
	E	0.0	0.0
CONNECTOR			
CN1	1	5.2	0.0
	2	0.0	—
	3	—	—
	4	0.0	5.2
	5	5.0	0.0
	6	0.0	5.1
	7	8.9	9.0
	8	5.2	5.2
	9	1.4	5.3
	10	1.2	5.2
	11	0.0	0.0
CN2	1	Not measured	
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
CN3	1	0.0	0.0
	2	0.0	0.3
	3	0.0	0.0
	4	3.3	2.1
	5	0.0	0.0
	6	0.0	0.0
	7	3.3	2.3
	8	5.1	4.9
	9	0.0	0.0

— SOLDER SIDE —

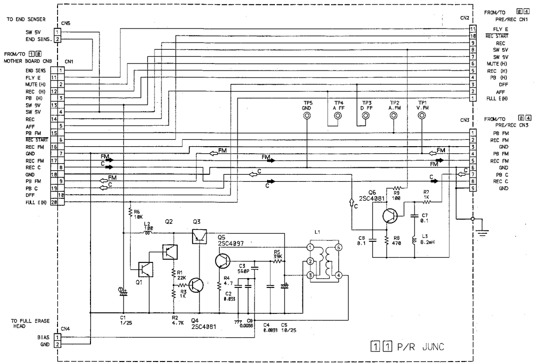

P/R PWB
TP7
TP8
PRK20245
-01-01
0 4
P/R PWB ASS'Y
IC7
5
CN3
Q22
R51
R48
C31
R82
R83
Q32
C5
C4
Q2

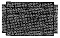
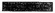
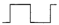
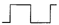
— PARTS SIDE —


R43
L8
Q6
R17
Q3
R30
TP2
IC1
TP7
TP8
IC7
5
C11
C63
Q21
R52
C16
TP9
C78
C38

TP2	TP3	TP7	TP8	TP9
				
V-rate REC 3.6 Vp-p	V-rate PB 1.8 Vp-p	V-rate PB 0.2 Vp-p	REC/PB 5 Vp-p (25 Hz)	PB 5 Vp-p (25 Hz)

4.15 PRE/REC JUNC SCHEMATIC DIAGRAM AND CIRCUIT BOARD

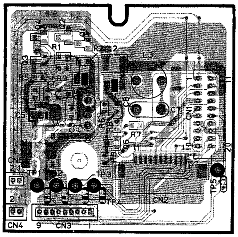

TO END SENSER
CN5
SW 5V
END SENS.
FROM/TO 1 8
MOTHER BOARD CN8
CN1
END SENS
FLY E
MUTE (H)
REC (H)
PB (H)
SW 9V
SW 5V
REC
AFF
PB FM
REC START
REC FM
GND
REC FM
REC C
GND
PB FM
PB C
DFF
FULL E(H)
CN2
FROM/TO 8 4
PRE/REC CN1
FLY E
REC START
REC
SW 5V
SW 9V
MUTE (H)
REC (H)
PB (H)
DFF
AFF
FULL E(H)
CN3
FROM/TO 8 4
PRE/REC CN3
PB FM
REC FM
GND
PB FM
REC FM
GND
PB C
REC C
GND
TP5 GND
TP4 A FF
TP3 D FF
TP2 A.FM
TP1 V.FM
FM
C
Q6 2SC4081
R9 100
R7 1K
C7 0.1
C8 0.1
R8 470
L3 8.2mH
R6 10K
L2 100
Q1
Q2
Q3
Q5 2SC4097
L1
R5 39K
C3 560P
R1 22K
R3 1K
R4 4.7
C2 0.033
C1 1/25
R2 4.7K
Q4 2SC4081
C9 0.0056
C4 0.0039
C5 10/25
TO FULL ERASE HEAD
CN4
BIAS
GND
1 1 P/R JUNC

TP1	TP2	TP3	TP4
			
V-rate PB 0.2 Vp-p	V-rate PB 2 Vp-p	REC/PB 5 Vp-p (25 Hz)	PB 5 Vp-p (25 Hz)

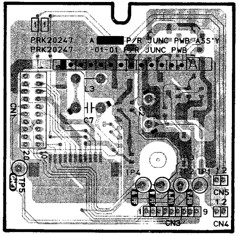
P/R JUNC <11>

SYMBOL	No.	REC	PB
TRANSISTOR			
Q1	B	3.7	0.0
	C	0.0	8.9
	E	0.0	0.0
Q2	B	0.0	8.9
	C	8.7	0.0
	E	8.7	9.0
Q3	B	0.0	8.9
	C	8.6	—
	E	8.7	9.0
Q4	B	0.6	0.0
	C	0.0	8.9
	E	0.0	0.0
Q5	B	-1.0	0.3
	C	8.6	0.3
	E	0.0	0.0
Q6	B	Not measured	
	C		
	E		
CONNECTOR			
CN1	1	0.0	0.0
	2	0.0	5.1
	3	0.0	5.2
	4	5.2	5.2
	5	0.0	5.2
	6	1.2	5.1
	7	0.0	0.0
	8	5.0	4.9
	9	3.2	1.8
	10	3.2	—
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
CN2	1	5.2	0.0
	2	0.0	0.0
	3	—	—
	4	0.0	5.2
	5	5.0	0.0
	6	0.0	5.1
	7	8.9	9.0
	8	5.2	5.2
	9	1.3	5.2
	10	1.2	5.1
	11	0.0	0.0
CN3	1	0.0	0.0
	2	2.0	0.0
	3	0.0	0.0
	4	3.2	1.6
	5	—	0.0
	6	0.0	0.0
	7	3.3	1.7
	8	5.0	4.9
	9	0.0	0.0
CN4	1	0.0	0.0
	2	0.0	0.0
CN5	1	5.2	5.2
	2	0.0	0.0

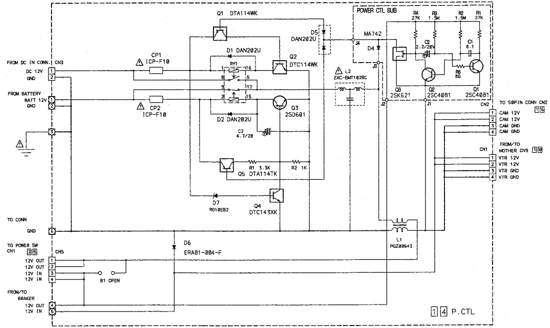
— PARTS SIDE —


Q4
Q2
Q1
R1
R2
Q3
L3
R5
R3
C5
C8
C7
CN1
R6
R8
R7
Q6
R9
CN5
TP1
TP2
TP3
TP4
TP5
CN2
CN4
CN3
9
1
2
1
10
20
11

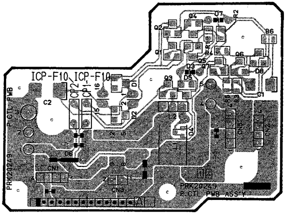
— SOLDER SIDE —


PRK20247 A P/R JUNC PWB ASS'Y
PRK20247 -01-01 P/R JUNC PWB
L3
C7
CN1
20
TP5
TP4
TP2
TP1
CN5
CN3
CN4
1
9

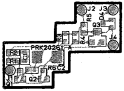
4.16 POWER CTL SCHEMATIC DIAGRAM AND CIRCUIT BOARD


FROM DC IN CONN. CN3
DC 12V
GND
FROM BATTERY
BATT 12V
GND
TO CONN
GND
TO POWER SW
CN1 2 5
CN5
12V OUT
12V OUT
12V IN
12V IN
B1 OPEN
FROM/TO
BRAKER
12V OUT
12V IN
CP1
ICP-F10
CP2
ICP-F10
Q1 DTA114WK
D1 DAN202U
RY1
D2 DAN202U
C2
4.7/20
Q2
DTC114WK
Q3
2SD601
R1 3.3K
R2 1K
Q5 DTA114TK
D7
RD10EB2
Q4
DTC143XK
D6
ERA81-004-F
D5
DAN202U
L2
EXC-EMT102BC
L1
PGZ00643
POWER CTL SUB
MA742
D4
J4
J3
J2
J1
R4 27K
R3 1.5M
R2 1.5M
R1 27K
C2 2.2/20V
C1 0.1
R6 0Ω
Q3 2SK621
Q2 2SC4081
Q1 2SC4081
TO 50PIN CONN CN2
1 6
CN2
CAM 12V
CAM 12V
CAM GND
CAM GND
FROM/TO
MOTHER CN9 1 0
CN1
VTR 12V
VTR 12V
VTR GND
VTR GND
1 4 P.CTL

— POWER CTL —


ICP-F10
ICP-F10
CP2
CP1
C2
Q2
Q4
D7
R2
B6
Q1
R4
Q6
Q5
D3
Q7
D5
D8
Q3
C1
D1
L1
L2
D4
CN1
CN3
CN5
CN2
D6
P.CTL PWB
PRK20249
PRK20249
P.CTL PWB ASS'Y

— POWER CTL SUB —

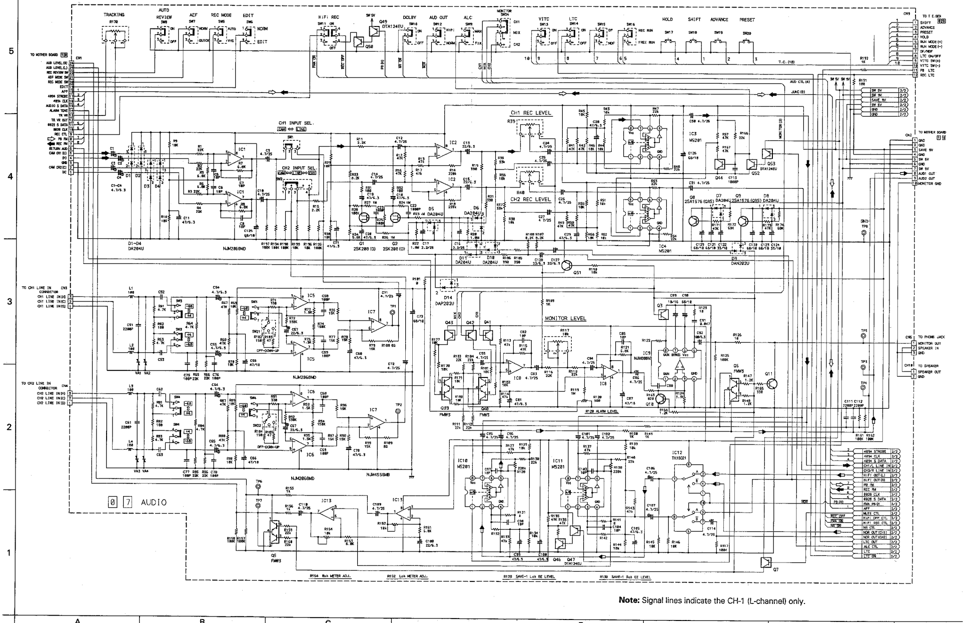

J2
J3
R5
D4
Q3
R3
R4
J4
PRK20261-A
R2
R1
C1
R6
C2
Q2
J1
Q1

P.CTL <14> 1/1

SYMBOL No.		EE
TRANSISTOR		
Q1	B C E	13.1 0.0 13.1
Q2	B C E	0.0 13.1 0.0
Q3	B C E	0.0 0.5 0.0
Q4	B C E	3.5 0.0 0.0
Q5	B C E	0.4 0.0 0.1
Q6	B C E	0.6 0.0 0.0
Q7	B C E	0.0 3.7 0.0

SYMBOL No.		EE
CONNECTOR		
CN1	1 2 3 4 5 6	13.0 13.0 0.0 0.0 NC NC
CN2	1 2 3 4	13.0 13.0 0.0 0.0
CN3	1 2	13.1 0.0
CN5	1 2 3 4	13.0 13.0 13.0 13.0

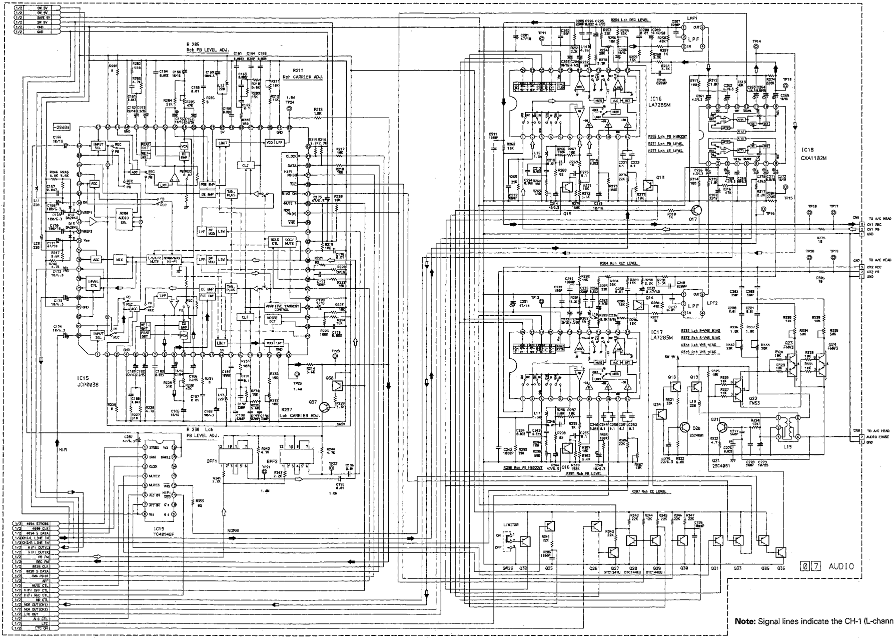
4.17 AUDIO SCHEMATIC DIAGRAM (1/2)



5
4
3
2
1
A
B
C
E
F
G
H
TRACKING
AUTO REVIEW
AEF
REC MODE
EDIT
HiFi REC
DOLBY
AUD OUT
ALC
MONITOR
VITC
LTC
HOLD
SHIFT
ADVANCE
PRESET
TO MOTHER BOARD
TO T.C.GEN
CH1 INPUT SEL.
CH2 INPUT SEL.
CH1 REC LEVEL
CH2 REC LEVEL
MONITOR LEVEL
TO CH1 LINE IN CONNECTOR
TO CH2 LINE IN CONNECTOR
TO PHONE JACK
TO SPEAKER
IC1
IC2
IC3
M5201
IC4
IC5
IC6
IC7
IC8
IC9
NJM386M
IC10
IC11
IC12
TK15021
IC13
NJM2068MD
NJM4556MB
DA204U
DAP202U
DAN202U
2SK208 (O)
DTA124EU
FMW3
2SA1576 (QRS)
0 7 AUDIO
R154 Rch METER ADJ.
R152 Lch METER ADJ.
R128 SAVE-1 Lch EE LEVEL
R138 SAVE-1 Rch EE LEVEL
R120 ALARM LEVEL

Note: Signal lines indicate the CH-1 (L-channel) only.

— AUDIO SCHEMATIC DIAGRAM (2/2) —

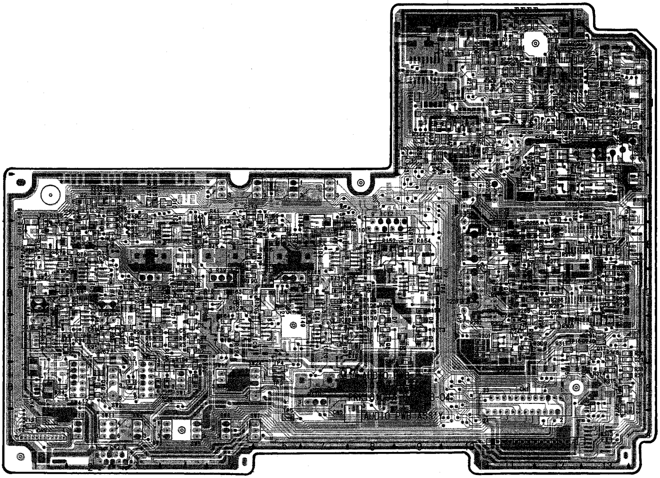


1/2 SW 5V
1/2 SW 9V
1/2 SAVE 5V
1/2 SW 5V
1/2 GND
1/2 GND
R 205 Rch PB LEVEL ADJ.
R211 Rch CARRIER ADJ.
-20dBs
INPUT SEL
PEAK DET
WEI-GHT
VCA
DE EMP
AGC
LPF
PRE EMP
TAN. PLUS
LIMIT
CLI
VCO LPF
CLOCK
DATA
HIFI PB (H)
REC
BIAS ON
MUTE 1
NOR PB (H)
VHS
NORM AUDIO SEL
MIX
L/ST/R MUTE
NORM/MIX HI-FI
LEVEL CTL
DF MOD
LIM
HOLD CTL
DOC/ MUTE
ADAPTIVE TANGENT CONTROL
NOISE DET
IC15
JCP0038
R237 Lch CARRIER ADJ.
R 230 Lch PB LEVEL ADJ.
BPF1
BPF2
HI-FI
NORM
IC19
TC4094BF
STROBE
DATA
CLOCK
MUTE2
MUTE3
ALC ON
ATT ON
Vss
Vdd
ENABLE
VHS
HIFI REC
1/2 4094 STROBE
1/2 4094 CLK
1/2 4094 S DATA
1/2 CH1/L LINE IN
1/2 CH2/R LINE IN
1/2 HIFI OUT(L)
1/2 HIFI OUT(R)
1/2 PB FM
1/2 REC FM
1/2 8828 CLK
1/2 8828 S DATA
1/2 FMA PB (H)
1/2 AEF
1/2 MUTE CTL
1/2 HIFI OFF CTL
1/2 HIFI REC CTL
1/2 NR CTL
1/2 NOR OUT (CH1)
1/2 NOR OUT (CH2)
1/2 LTC OUT
1/2 ALC CTL
1/2 LTC
1/2 LTC ON
R254 Lch REC LEVEL
LPF1
LPF2
IC16
LA7285M
IC17
LA7285M
IC18
CXA1102M
R265 Lch PB HiBOOST
R271 Lch PB LEVEL
R277 Lch EE LEVEL
R284 Rch REC LEVEL
R295 Rch PB HiBOOST
R301 Rch PB LEVEL
R307 Rch EE LEVEL
R332 Lch S-VHS BIAS
R333 Rch S-VHS BIAS
R334 Lch VHS BIAS
R335 Rch VHS BIAS
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20 2SC4081
Q21 2SC4081
Q22 FMS3
Q23 FMW3
Q24 FMW3
Q34
Q37
Q38
L19
CN6 TO A/C HEAD
CH1 REC
CH1 PB
GND
CN7 TO A/C HEAD
CH2 REC
CH2 PB
GND
CN8 TO A/C HEAD
AUDIO ERASE
GND
LIMITER
ON
OFF
SW23
Q32
Q25
Q26
Q27 DTC124TU
Q28 DTC144EU
Q29 DTC144EU
Q30
Q31
Q33
Q35
Q36
07 AUDIO
6
5
4
3
2
1
A
B
C
D
E
F
G
H

Note: Signal lines indicate the CH-1 (L-channel) only.

4.18 AUDIO CIRCUIT BOARD

— SOLDER SIDE —

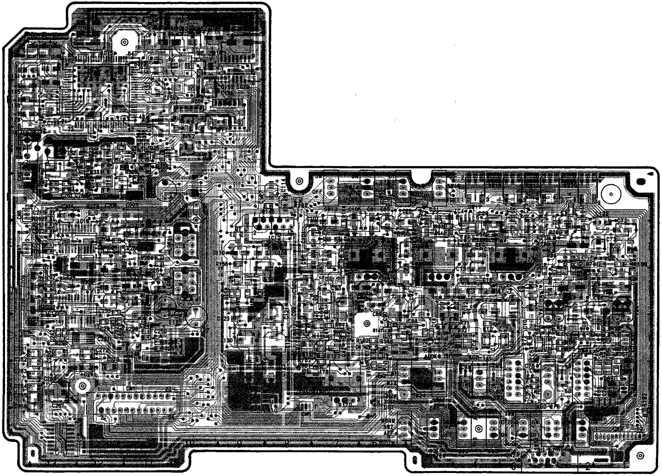


AUDIO BOARD

SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	5.5	5.5
	2	4.5	4.5
	3	4.5	4.5
	4	0.0	0.0
	5	4.5	4.5
	6	4.5	4.5
	7	4.5	4.5
	8	9.1	9.1
IC2	1	4.5	4.6
	2	4.6	4.6
	3	4.5	4.5
	4	0.0	0.0
	5	4.5	4.5
	6	4.6	4.6
	7	4.6	4.6
	8	0.0	0.0
IC3	1	7.7	7.7
	2	4.6	4.6
	3	4.6	4.6
	4	0.0	0.0
	5	4.6	4.6
	6	4.6	4.6
	7	4.5	4.5
	8	9.1	9.1
IC4	1	7.7	7.7
	2	4.5	4.5
	3	4.6	4.6
	4	0.0	0.0
	5	4.6	4.6
	6	4.6	4.6
	7	4.5	4.5
	8	9.1	9.1
IC5	1	4.6	0.1
	2	4.6	4.5
	3	4.5	4.5
	4	0.0	0.0
	5	4.5	4.5
	6	4.6	4.5
	7	4.6	4.5
	8	9.1	9.1
IC6	1	4.6	4.6
	2	4.6	4.6
	3	4.5	4.5
	4	0.0	0.0
	5	4.5	4.5
	6	4.6	4.6
	7	4.6	4.6
	8	9.1	9.1
IC7	1	4.6	4.6
	2	4.6	4.6
	3	4.6	4.6
	4	0.0	0.0
	5	4.5	4.5
	6	4.6	4.5
	7	4.6	4.5
	8	9.1	9.1
IC8	1	4.6	4.6
	2	4.6	4.6
	3	4.6	4.6
	4	0.0	0.0
	5	4.6	4.6
	6	4.6	4.6
	7	4.6	4.6
	8	9.1	9.1
IC9	1	1.3	1.2
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
	5	4.6	4.6
	6	9.1	9.1
	7	4.5	4.5
	8	1.3	1.2
IC10	1	9.1	9.1
	2	4.6	4.6
	3	4.6	4.6
	4	0.0	0.0
	5	4.6	4.6
	6	4.6	4.6
	7	4.6	4.6
IC10	8	9.1	9.1
IC11	1	9.1	9.1
	2	4.6	4.6
	3	4.6	4.6
	4	0.0	0.0
	5	4.6	4.6
	6	4.6	4.6
	7	4.6	4.6
	8	9.1	9.1
IC12	1	0.0	0.0
	2	4.5	4.5
	3	4.5	4.5
	4	4.5	4.5
	5	0.0	0.0
	6	9.1	9.1
	7	4.6	4.5
	8	4.6	4.6
	9	4.6	4.6
	10	0.0	0.0
IC13	1	4.6	4.6
	2	4.6	4.6
	3	4.6	4.6
	4	0.0	0.0
	5	4.6	4.6
	6	4.6	4.6
	7	4.6	4.6
	8	9.1	9.1
IC15	1	2.4	2.5
	2	5.3	5.2
	3	0.0	0.0
	4	0.0	0.0
	5	2.4	2.4
	6	1.5	1.5
	7	2.4	2.5
	8	2.4	2.4
	9	2.4	2.5
	10	2.4	2.4
	11	2.4	2.5
	12	2.4	2.5
	13	2.4	2.5
	14	5.2	5.0
	15	0.1	2.4
	16	1.0	2.5
	17	1.0	2.5
	18	2.2	2.3
	19	2.5	2.4
	20	0.0	0.0
	21	2.0	0.0
	22	5.1	0.1
	23	3.4	0.1
	24	3.4	3.2
	25	1.9	3.4
	26	0.0	0.0
	27	0.0	0.0
	28	5.2	0.1
	29	0.0	0.0
	30	0.1	2.5
	31	5.2	5.2
	32	5.3	5.3
	33	0.1	2.5
	34	1.5	0.0
	35	0.1	3.6
	36	5.2	5.2
	37	0.1	5.2
	38	0.1	5.0
	39	0.1	5.2
	40	0.1	0.1
	41	0.1	0.1
	42	0.0	0.0
	43	2.1	0.1
	44	0.0	0.0
	45	2.5	2.5
	46	2.2	2.3
	47	1.5	2.3
	48	1.4	2.5
	49	1.2	2.4
	50	5.2	5.1
	51	2.4	2.5
	52	2.4	2.5
	53	2.4	2.5
	54	2.4	2.4
	55	2.4	2.5
	56	2.4	2.4
	57	2.4	2.5
	58	1.5	1.2
	59	2.4	2.4
	60	0.0	0.0
	61	5.3	5.2
	62	5.3	5.2
	63	2.4	2.5
	64	2.4	2.5
	65	2.4	2.5
	66	2.4	2.5
	67	2.7	2.7
	68	1.9	2.0
	69	2.4	2.5
	70	4.9	4.9
	71	2.4	2.5
	72	2.4	2.5
	73	4.6	4.7
	74	8.9	8.9
	75	0.3	0.2
	76	4.6	4.6
	77	4.6	4.6
	78	4.6	4.7
	79	4.6	4.7
	80	4.5	4.5
	81	0.0	0.0
	82	0.2	0.3
	83	2.4	2.5
	84	2.4	2.5
IC16	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	0.6	0.6
	7	3.4	3.4
	8	3.8	3.8
	9	0.0	0.0
	10	3.8	3.8
	11	0.0	0.0
	12	3.8	3.8
	13	0.0	0.0
	14	3.7	3.7
	15	0.0	0.0
	16	0.0	0.0
	17	1.4	0.0
	18	3.7	3.6
	19	9.1	9.0
	20	9.1	9.1
	21	0.0	0.0
	22	4.4	0.0
	23	0.0	0.0
	24	3.8	0.0
IC17	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	0.6	0.6
	7	3.4	3.4
	8	3.8	3.8
	9	0.0	0.0
	10	3.8	3.8
IC17	11	0.0	0.0
	12	3.8	3.8
	13	0.0	0.0
	14	3.7	3.7
	15	0.0	0.0
	16	0.0	0.0
	17	1.4	0.0
	18	3.7	3.6
	19	9.1	9.0
	20	9.1	9.1
	21	0.0	0.0
	22	4.4	0.0
	23	0.0	0.0
	24	3.8	0.0
IC18	1	4.6	4.6
	2	9.1	9.1
	3	4.6	4.6
	4	4.7	4.7
	5	0.0	0.2
	6	4.8	4.7
	7	0.4	0.7
	8	4.7	4.7
	9	4.7	4.7
	10	0.4	0.7
	11	4.8	4.7
	12	0.1	3.6
	13	1.2	1.2
	14	4.6	4.6
IC18	15	0.0	0.0
	16	4.6	0.0
IC19	1	0.0	0.0
	2	5.1	5.1
	3	0.1	0.1
	4	5.3	5.3
	5	5.3	5.3
	6	5.2	5.2
	7	5.3	5.3
	8	0.0	0.0
	9	0.2	5.2
	10	0.2	5.2
	11	1.3	5.3
	12	5.3	0.1
	13	0.0	0.0
	14	0.0	0.0
	15	5.3	5.3
	16	5.3	5.3
TRANSISTOR			
Q1	G	4.1	4.1
	D	0.0	0.0
	S	4.1	4.1
Q2	G	4.1	4.1
	D	0.0	0.0
	S	4.1	4.1
Q5	1	0.0	0.8
	2	0.0	0.7
	3	-0.1	-0.3
	4	0.0	0.0
	5	0.0	-0.3
Q6	1	0.0	0.0
	2	0.0	0.0
	3	0.0	-0.3
	4	0.0	0.0
	5	0.0	-0.3
Q7	B	5.3	5.3
	C	-0.2	-0.3
	E	5.3	5.3
Q8	B	9.0	9.0
	C	0.0	-0.3
	E	8.6	8.7
Q9	B	9.0	9.0
	C	0.0	-0.2
	E	8.6	8.6
Q10	B	-0.1	-0.2
	C	0.0	0.0
	E	0.0	0.0
Q11	B	0.0	-0.3
	C	0.0	0.0
	E	0.0	0.0
Q13	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q14	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q15	B	0.0	0.0
	C	0.2	0.0
	E	0.0	0.0
Q16	B	0.0	0.0
	C	0.1	0.0
	E	0.0	0.0
Q17	B	0.0	-0.3
	C	0.0	0.0
	E	0.0	0.0
Q18	B	0.0	9.1
	C	9.1	0.0
	E	9.1	9.1

SYMBOL	No.	REC	PB
TRANSISTOR			
Q19	B	0.1	9.1
	C	8.7	0.2
	E	9.1	9.1
Q20	B	0.7	0.0
	C	0.1	9.1
	E	0.0	0.0
Q21	B	0.6	0.1
	C	8.2	0.1
	E	0.3	0.0
Q22	1	-0.9	9.1
	2	-1.3	9.1
	3	9.1	8.4
	4	9.1	9.1
	5	9.1	8.4
Q23	1	0.2	0.0
	2	0.0	0.0
	3	-0.9	0.7
	4	0.0	0.0
	5	-0.9	0.7
Q24	1	0.0	0.0
	2	0.1	0.0
	3	-1.3	0.7
	4	0.0	0.0
	5	-1.3	0.7
Q25	B	5.3	5.3
	C	0.0	0.0
	E	5.2	5.2
Q26	B	5.2	5.2
	C	0.0	-0.3
	E	5.2	5.2
Q27	B	0.0	-0.3
	C	4.4	0.0
	E	0.0	0.0
Q28	B	0.1	3.6
	C	4.4	0.0
	E	0.0	0.0
Q29	B	0.1	3.6
	C	4.4	0.0
	E	0.0	0.0
Q30	B	0.1	3.0
	C	3.8	0.0
	E	0.1	0.0
Q31	B	5.3	5.3
	C	0.0	0.0
	E	5.2	5.2
Q32	B	5.2	5.2
	C	0.0	0.0
	E	5.2	5.2
Q33	B	0.1	5.2
	C	5.2	0.0
	E	5.3	5.2
Q34	B	5.2	0.0
	C	0.0	9.1
	E	0.0	0.0
Q35	B	5.3	0.1
	C	0.0	5.2
	E	5.3	5.2
Q36	B	0.0	5.2
	C	9.1	0.1
	E	0.0	0.0
Q37	B	0.1	0.0
	C	2.1	0.0
	E	0.0	0.0
Q38	B	5.2	5.2
	C	0.0	-0.2
	E	5.2	5.2
Q39	1	0.0	0.0
	2	0.0	0.0
	3	0.0	-0.2
	4	0.0	0.0
	5	0.0	-0.2
Q40	1	0.0	0.0
	2	0.0	0.0
	3	0.7	0.7
	4	0.0	0.0
	5	0.0	-0.1
Q41	B	0.0	0.0
	C	9.1	9.1
	E	9.1	9.1
Q42	B	9.1	9.1
	C	0.0	-0.2
	E	9.1	9.1
Q43	B	9.1	9.1
	C	0.0	-0.3
	E	9.1	9.1
Q44	B	5.2	5.2
	C	0.0	0.0
	E	0.0	0.0
Q46	B	0.0	0.0
	C	9.0	9.0
	E	0.0	0.0
Q47	B	9.1	9.1
	C	0.0	0.0
	E	9.1	9.1
Q49	B	0.1	5.2
	C	5.2	0.0
	E	5.3	5.3
Q50	B	5.2	0.0
	C	0.0	0.0
	E	0.0	0.0
Q51	B	0.0	-0.3
	C	0.0	0.0
	E	0.0	0.0
CONNECTOR			
CN1	1	0.0	0.0
	2	3.1	3.3
	3	0.0	0.0
	4	0.0	0.0
	5	3.1	3.3
	6	0.0	0.0
	7	2.0	0.0
	8	0.0	0.0
	9	1.3	5.3
	10	0.1	0.1
	11	0.1	0.1
	12	0.1	4.8
	13	2.5	2.5
	14	0.4	0.4
	15	0.0	5.1
	16	0.0	0.1
	17	0.0	0.0
	18	0.0	0.0
	19	5.2	5.1
	20	0.0	0.0
	21	0.0	0.0
	22	0.0	0.0
	23	0.0	0.8
	24	0.0	0.0
CN2	1	0.0	0.0
	2	0.0	0.0
	3	9.1	9.1
	4	0.0	0.0
	5	5.3	5.3
	6	0.0	0.0
	7	9.1	9.2
	8	0.0	0.0
	9	0.0	0.0
	10	0.0	0.0
CN3	1	-0.3	0.0
	2	0.0	0.0
	3	0.0	0.0
CN4	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
CN5	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
CN6	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
CN7	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
CN8	1	0.0	0.0
	2	0.0	0.0
CN9	1	-0.1	0.2
	2	-0.1	0.3
	3	0.0	0.0
	4	0.0	0.1
	5	0.1	0.1
	6	0.1	0.1
	7	0.1	0.1
	8	0.0	0.0
	9	0.0	0.0
	10	0.0	0.1
	11	0.0	0.1
	12	0.0	0.0
CN10	1	0.1	0.2
	2	0.0	0.2

— PARTS SIDE —



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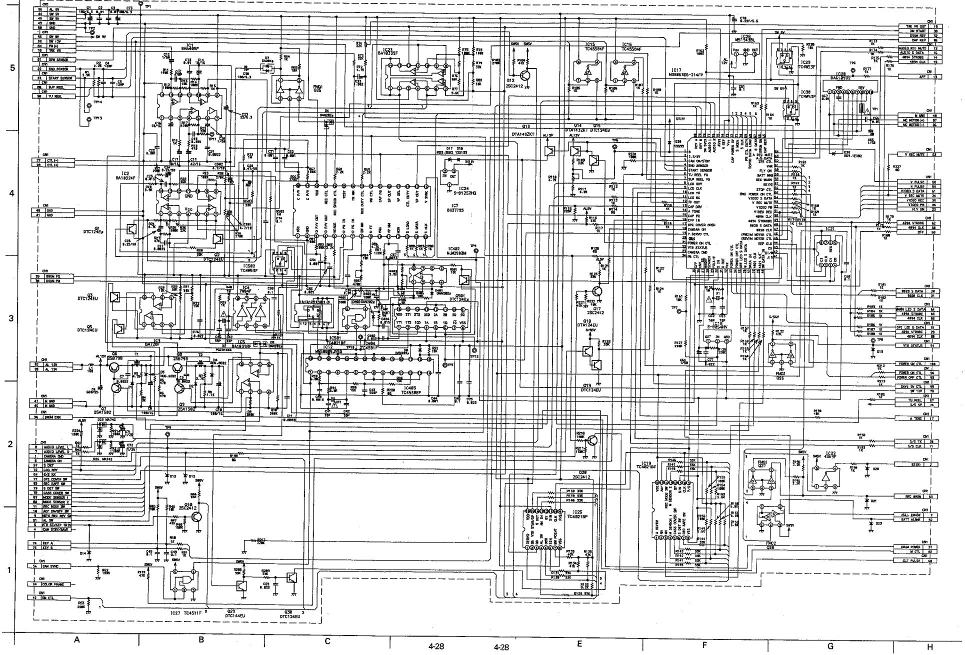
4.19 SYSCON/SERVO SCHEMATIC DIAGRAM


6
5
4
3
2
1
A
B
C
D
E
F
G
H
CN1
AL 5V
SW 5V
SW 5V
GND
GND
SW 9V
SW 12V
PG (+)
PG (-)
TRK VR
DEW SENSOR
END SENSOR
START SENSOR
SUP REEL
TU REEL
CTL (-)
CTL (+)
GND
GND
DRUM FG
DRUM PG
AL 12V
AL 12V
M GND
M GND
DRUM ERR
AUDIO LEVEL L
AUDIO LEVEL R
CAMERA CMD
CAMERA ON
S DET
LCD RDY
S/S SW
OPE COVER SW
REC SAFE SW
S DET SW
CASS COVER SW
MODE SENSOR 1
MODE SENSOR 2
REC MODE SW
AEF ON/OFF SW
AUTO REC REV SW
AL SW
VTR ST/STP TRIG
CAM STBY/SAVE
KEY A
KEY B
CAM SYNC
COLOR FRAME
RM CTL
TP1
TP2
TP13
TP14
IC1
BA6405F
IC2
BA10324F
IC3
BA728F
IC4
7W04F
IC5
BA10393F
IC7
BU3779S
IC12
MN50005JVES
IC15
TC4S584F
IC16
TC4S584F
IC17
M38863E6-214FP
IC18
S-8054HN
IC19
TC4021BF
IC21
IC22
4S69F
IC23
BA10339F
IC24
S-61252HG
IC25
TC4021BF
IC26
M51943BL
IC27
TC4S11F
IC28
BA6109U2
IC29
TC4W53F
IC30
TC4W53F
IC402
NJM2983M
IC403
TC4538BF
IC404
TC4S81F
IC501
TC4021BF
IC502
TC4W53F
Q1
DTC124E
Q2
DTC124EU
Q3
DTC124EU
Q5
DTC124EU
Q6
2SB798
Q7
2SA1582
Q8
2SB798
Q9
2SA1582
Q10
2SC2412
Q12
2SC2412
Q13
DTA143ZKT
Q14
DTA143ZKT
Q15
DTC124EU
Q17
2SC2412
Q18
DTA124EU
Q19
DTC124EU
Q20
2SC2412
Q29
DTC144EU
Q30
DTC124EU
Q501
DTC124E
FMG1
Q25
FMG1
Q26
FMG1
Q27
FMC2
Q28
TRK VR OUT
DM START
DRUM REF
CAP REV
AUDIO REC MUTE
AUDIO S DATA
4094 STROBE
4094 CLK
AFF
M GND
MC MOTOR (+)
MC MOTOR (-)
V REC MUTE
V PULSE
H PULSE
VIDEO S DATA
V REC MUTE
VIDEO REC
VIDEO PB
FLY ON
4094 STROBE
4094 CLK
OFF
8828 S DATA
8828 CLK
WARN LED S DATA
4094 STROBE
4094 CLK
OPE LED S DATA
4094 STROBE
4094 CLK
VTR STATUS
POWER ON CTL
POWER ON CTL
POWER OFF CTL
SAVE 5V CTL
SW 12V
TU REEL
S/S 5V
A TONE
S/S TX
S/S CLK
EE(H)
REC WARN
FULL ERASE
BATT ALARM
DRUM POWER
M CTL
CLT PULSE
TP9
TP4
TP5
TP6
TP7
TP8
TP10
TP12

6

5

4

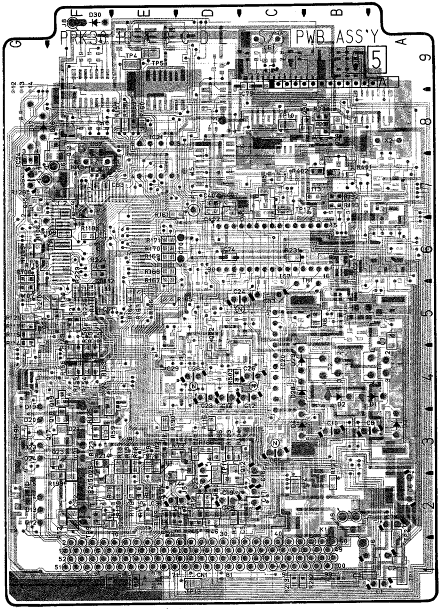
3

2

1

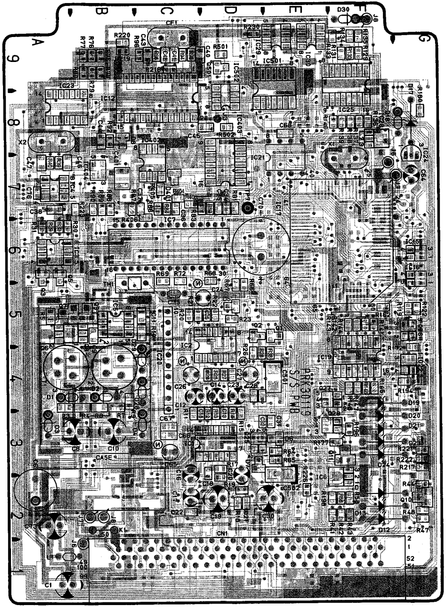
4.20 SYSCON/SERVO CIRCUIT BOARD

— SOLDER SIDE —



PRK30195E C-D L S/S PWB ASS'Y
D30
J8
TP4
TP5
IC21
IC7
TH1
CN1
TP13
K1
J6
X2
G
F
E
D
C
B
A

— PARTS SIDE —



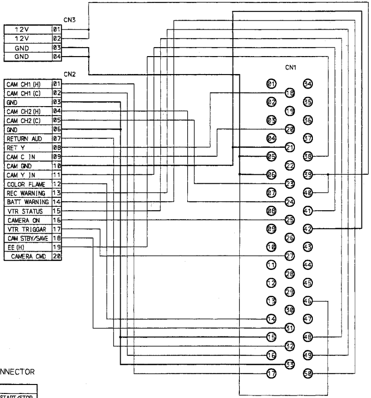
A
B
C
D
E
F
G
D30
J8
CF1
IC23
IC12
IC402
IC501
IC502
IC25
IC21
IC7
IC2
IC19
IC6
X1
X2
TH1
CASE
CN1
K1
J6
S/S PWB

A
B
C
D
E
F
G
H

SYSCON/SERVO BOARD

SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	0.0	0.0
	2	3.2	3.2
	3	2.5	2.5
	4	2.7	2.5
	5	3.0	2.5
	6	2.5	2.5
	7	2.6	2.9
	8	5.2	5.2
	9	2.3	2.2
	10	2.5	2.5
	11	2.5	2.5
	12	2.5	2.5
	13	2.5	2.5
	14	0.0	0.0
IC2	1	1.2	1.3
	2	2.5	2.5
	3	2.5	2.5
	4	5.2	5.2
	5	2.6	2.6
	6	2.6	2.6
	7	2.6	2.6
	8	2.6	2.6
	9	2.6	2.6
	10	2.6	2.6
	11	0.0	0.0
	12	2.6	2.6
	13	2.6	2.6
	14	1.4	1.4
IC3	1	0.0	0.0
	2	2.6	2.6
	3	1.7	1.7
	4	0.0	0.0
	5	1.7	1.7
	6	2.6	2.6
	7	0.0	0.0
	8	5.2	5.2
IC4	1	2.5	2.5
	2	2.6	2.6
	3	0.4	0.4
	4	0.0	0.0
	5	4.8	4.8
	6	2.6	2.6
	7	2.6	2.6
	8	5.2	5.2
IC5	1	8.6	8.2
	2	2.5	2.6
	3	2.6	2.6
	4	0.0	0.0
	5	0.9	0.9
	6	0.9	0.9
	7	9.9	9.5
	8	12.2	12.3
IC7	1	2.6	2.6
	2	0.0	0.0
	3	2.6	2.6
	4	2.6	2.6
	5	4.9	4.9
	6	2.6	2.6
	7	4.4	4.4
	8	0.4	0.4
	9	0.4	0.0
	10	0.4	0.0
	11	0.1	0.1
	12	0.1	0.1
	13	5.1	5.1
	14	0.1	0.1
	15	5.0	5.1
	16	0.4	0.4
	17	0.1	0.1
	18	0.1	0.1
	19	5.2	5.2
	20	0.1	0.1
	21	2.3	2.2
	22	2.6	2.9
	23	0.2	0.1
	24	2.5	2.5
	25	5.2	5.2
	26	4.9	4.9
	27	3.2	0.0
	28	5.2	5.2
	29	2.5	2.5
	30	2.6	2.6
IC12	1	0.4	0.4
	2	0.4	0.4
	3	2.2	2.2
	4	0.0	0.0
	5	2.4	2.4
	6	0.1	0.1
	7	0.1	0.1
	8	0.1	0.1
	9	0.0	0.0
	10	0.1	0.0
	11	0.1	0.1
	12	0.4	0.4
	13	0.1	0.1
	14	0.0	0.0
	15	0.9	0.9
	16	0.9	0.9
	17	5.2	5.2
	18	0.0	0.0
	19	2.7	2.7
	20	0.0	0.0
	21	0.0	0.0
	22	0.0	2.6
	23	0.0	0.0
	24	0.1	0.1
	25	0.0	0.0
	26	0.0	0.0
	27	0.0	0.0
	28	5.2	5.2
IC14	1	0.0	0.0
	2	3.6	3.6
	3	5.2	5.2
	4	0.0	2.6
	5	5.2	5.2
	6	1.8	1.7
	7	3.5	3.5
	8	0.0	0.0
	9	5.2	0.0
	10	0.0	0.0
	11	5.2	5.2
	12	0.0	3.5
	13	0.0	5.1
	14	5.2	3.0
	15	0.0	0.0
	16	5.2	5.2
IC15	1	0.1	0.2
	2	4.2	4.1
	3	0.0	0.0
	4	0.1	0.1
	5	5.2	5.2
IC16	1	0.2	-0.1
	2	0.2	4.2
	3	0.0	0.0
	4	0.1	0.1
	5	5.2	5.2
IC17	1	4.4	4.4
	2	0.0	0.0
	3	0.0	0.0
	4	0.1	0.1
	5	0.1	0.1
	6	0.1	0.1
	7	5.2	0.0
	8	4.7	4.5
	9	5.0	5.0
	10	5.0	5.0
	11	5.0	5.0
	12	0.0	0.0
	13	0.0	0.0
	14	0.0	0.0
	15	2.2	2.2
	16	5.2	5.2
	17	5.1	5.1
	18	5.1	5.1
	19	5.2	5.2
	20	0.0	0.0
	21	5.1	5.1
	22	5.1	5.1
	23	5.2	5.2
	24	5.2	2.9
	25	0.1	0.3
	26	0.0	0.0
	27	5.0	5.0
	28	0.0	0.0
	29	5.1	0.0
	30	2.4	2.4
	31	2.4	2.4
	32	0.0	0.0
	33	0.0	0.0
	34	0.0	0.0
	35	0.1	0.1
	36	0.1	0.1
	37	5.2	5.2
	38	0.1	0.1
	39	0.0	0.0
	40	0.1	5.1
	41	5.0	5.0
	42	5.1	0.0
	43	5.1	5.1
	44	5.1	5.1
	45	0.0	0.0
	46	0.0	0.0
	47	0.2	0.2
	48	0.1	0.1
	49	0.0	0.0
	50	0.1	0.1
	51	5.1	0.0
	52	0.0	5.1
	53	0.0	5.1
	54	5.0	0.1
	55	5.1	5.1
	56	0.0	0.0
	57	0.0	5.1
	58	0.0	5.1
	59	0.0	0.0
	60	0.0	0.0
	61	0.0	0.4
	62	0.0	0.0
	63	5.0	5.1
	64	0.1	5.1
	65	0.0	0.0
	66	5.0	5.0
	67	0.1	0.0
	68	5.1	5.1
	69	0.0	0.0
	70	5.1	5.1
	71	0.0	0.0
	72	0.0	0.0
	73	5.1	5.1
	74	5.1	5.1
	75	0.0	0.0
	76	0.0	0.0
	77	0.0	0.0
	78	5.2	5.2
	79	5.2	5.2
	80	0.0	5.2
IC18	1	5.0	5.0
	2	5.1	5.1
	3	0.0	0.0
IC19	1	0.0	0.1
	2	0.1	0.1
	3	0.1	5.1
	4	4.4	0.1
	5	0.0	0.0
	6	5.2	5.2
	7	0.0	5.2
	8	0.0	0.0
	9	0.1	0.0
	10	0.1	0.1
	11	0.1	0.1
	12	0.1	0.1
	13	4.4	0.0
	14	0.0	0.0
	15	0.0	0.0
	16	5.2	5.2
IC20	1	9.1	9.2
	2	12.2	12.3
	3	0.1	0.1
	4	0.1	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	0.1	0.0
	8	0.1	0.1
	9	12.2	12.3
	10	9.1	9.2
IC21	1	5.1	5.1
	2	5.1	5.1
	3	5.1	0.0
	4	5.1	0.0
	5	0.0	0.0
	6	5.1	5.1
	7	5.2	5.2
	8	5.2	5.2
IC22	1	0.1	0.1
	2	0.0	5.1
	3	0.0	0.0
	4	5.2	0.0
	5	5.2	5.2
IC23	1	5.2	5.2
	2	5.2	5.2
	3	5.2	5.2
	4	1.1	1.1
	5	1.4	1.4
	6	0.0	1.4
	7	2.1	0.0
	8	1.2	1.2
	9	2.0	2.0
	10	0.2	0.2
	11	1.2	1.2
	12	0.0	0.0
	13	5.2	5.2
	14	5.2	5.2
IC24	1	0.0	0.0
	2	9.2	9.2
	3	5.3	5.3
IC25	1	5.2	5.2
	2	0.1	0.1
	3	5.2	5.2
	4	0.6	0.6
	5	5.2	5.2
	6	5.2	5.2
	7	5.2	5.2
	8	0.0	0.0
	9	0.1	0.0
	10	0.1	0.1
	11	0.0	0.0
	12	0.1	0.1
	13	4.4	4.4
	14	0.0	0.1
	15	5.2	5.2
	16	5.2	5.2
IC26	1	0.6	0.6
	2	0.0	0.0
	3	0.0	0.0
	4	0.1	0.0
	5	0.1	0.1
	6	5.1	5.1
	7	0.6	0.6
	8	5.2	5.2
IC27	1	4.6	4.7
	2	4.6	4.7
	3	0.0	0.0
	4	0.4	0.4
	5	5.2	5.2
IC28	1	12.2	12.2
	2	0.0	0.0
	3	5.2	5.2
IC401	1	0.7	0.0
	2	0.0	5.2
	3	0.0	0.0
	4	0.0	0.0
	5	5.2	5.2
IC402	1	3.7	5.2
	2	2.5	1.7
	3	3.0	3.1
	4	0.0	0.0
	5	0.4	0.4
	6	0.3	0.3
	7	0.0	0.0
	8	5.2	5.2
IC403	1	0.0	0.0
	2	0.0	4.7
	3	5.2	5.2
	4	0.0	0.0
	5	0.0	0.1
	6	5.2	0.0
	7	0.0	5.2
	8	0.0	0.0
	9	4.6	0.1
	10	0.7	0.0
	11	5.2	5.2
	12	0.0	0.0
	13	5.1	0.0
	14	4.5	5.2
	15	0.0	0.0
	16	5.2	5.2
IC404	1	2.6	2.6
	2	0.0	0.0
	3	0.0	0.0
	4	0.1	0.6
	5	5.2	5.2
TRANSISTOR			
Q1	B	0.1	0.0
	C	1.2	1.2
	E	0.0	0.0
Q2	B	0.1	0.0
	C	2.5	2.5
	E	2.6	2.6
Q3	B	0.0	0.0
	C	11.7	11.7
	E	0.0	0.0
Q4	B	-.-	-.-
	C	-.-	-.-
	E	-.-	-.-
Q5	B	0.0	0.0
	C	12.2	12.2
	E	0.0	0.0
Q6	B	11.8	11.9
	C	6.6	6.6
	E	12.2	12.2
Q7	B	8.2	8.4
	C	11.7	11.7
	E	11.8	11.9
Q8	B	12.0	12.1
	C	3.3	3.3
	E	12.2	12.2
Q9	B	9.6	9.7
	C	12.2	12.2
	E	12.0	12.1
Q10	B	0.0	0.0
	C	5.2	5.2
	E	0.0	0.0
Q12	B	0.1	0.0
	C	5.2	5.2
	E	0.0	0.0
Q13	B	0.1	0.0
	C	12.0	12.2
	E	12.2	12.4
Q14	B	0.1	0.1
	C	12.2	12.2
	E	12.2	12.2
Q15	B	5.1	5.1
	C	0.1	0.1
	E	0.0	0.0
Q17	B	0.0	0.0
	C	5.1	5.1
	E	0.0	0.0
Q18	B	5.2	5.2
	C	0.0	0.0
	E	5.3	5.2
Q19	B	0.0	0.0
	C	5.2	5.2
	E	0.0	0.0
Q20	B	0.4	0.4
	C	2.1	1.7
	E	0.1	0.0
Q22	B	0.6	0.6
	C	9.1	9.2
	E	9.2	9.3
Q25	1	2.1	0.1
	2	1.5	3.7
	3	2.8	0.0
	4	0.0	0.0
	5	1.5	3.7
Q26	1	0.1	0.1
	2	0.0	0.1
	3	0.1	0.1
	4	0.1	0.0
	5	4.9	4.9
Q27	1	5.2	0.1
	2	5.2	0.0
	3	0.1	0.0
	4	0.1	0.0
	5	0.1	5.1
Q28	1	8.9	9.0
	2	0.0	0.0
	3	9.0	9.0
	4	0.1	0.0
	5	0.1	0.0
Q29	B	4.8	4.9
	C	0.1	0.1
	E	0.1	0.0
Q30	B	0.1	0.0
	C	5.2	5.2
	E	0.1	0.0
Q31	B	.	.
	C	.	.
	E	.	.
Q401	B	0.1	0.0
	C	5.2	5.2
	E	0.1	0.0
CONNECTOR			
CN1	1	5.2	5.2
	2	5.2	0.0
	3	5.1	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.0
	8	0.0	0.0
	9	0.0	0.0
	10	0.0	0.0
	11	0.0	0.0
	12	1.2	5.1
	13	0.0	5.1
	14	0.0	0.0
	15	0.1	0.1
	16	5.0	5.1
	17	0.0	0.0
	18	2.5	2.5
	19	4.9	4.9
	20	0.1	0.1
	21	0.1	0.1
	22	0.0	0.1
	23	0.0	0.0
	24	0.0	5.0
	25	4.8	0.1
	26	0.0	5.1
	27	0.0	0.0
	28	0.0	0.0
	29	0.0	0.0
	30	0.1	0.0
	31	0.1	0.0
	32	1.4	1.4
	33	0.0	0.1
	34	4.4	4.4
	35	2.6	2.6
	36	2.5	2.5
	37	6.4	6.4
	38	3.7	3.7
	39	12.3	12.3
	40	0.0	0.0
	41	0.0	0.0
	42	4.4	4.4
	43	0.0	0.0
	44	5.2	5.2
	45	5.2	5.2
	46	0.0	0.0
	47	0.0	0.0
	48	0.0	0.0
	49	0.0	0.0
	50	0.0	0.0
	51	0.0	-0.1
	52	0.0	0.0
	53	5.2	2.6
	54	0.0	0.0
	55	0.0	0.0
	56	4.7	4.7
	57	0.0	0.1
	58	0.1	0.1
	59	0.0	0.4
	60	0.1	0.1
	61	5.0	0.1
	62	0.0	0.0
	63	0.0	5.0
	64	0.0	0.0
	65	0.0	0.0
	66	0.1	0.1
	67	0.1	0.1
	68	2.1	0.0
	69	5.0	5.0
	70	5.0	5.1
	71	5.1	5.1
	72	4.6	4.5
	73	12.1	12.1
	74	5.2	5.2
	75	5.2	5.2
	76	5.2	5.2
	77	5.1	5.1
	78	0.0	0.0
	79	5.2	5.2
	80	5.2	3.2
	81	0.0	0.0
	82	3.2	3.2
	83	0.0	0.0
	84	2.6	2.6
	85	0.0	0.0
	86	0.1	0.1
	87	0.1	0.0
	88	4.5	4.5
	89	4.5	4.5
	90	4.0	4.2
	91	0.0	0.0
	92	0.0	5.2
	93	0.0	0.0
	94	0.0	0.0
	95	9.0	9.0
	96	5.1	5.1
	97	12.3	12.4
	98	12.3	12.4
	99	0.1	0.1
	100	0.1	4.8

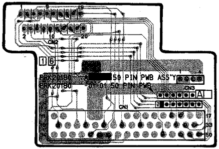
4.21 50 PIN SCHEMATIC DIAGRAM AND CIRCUIT BOARD



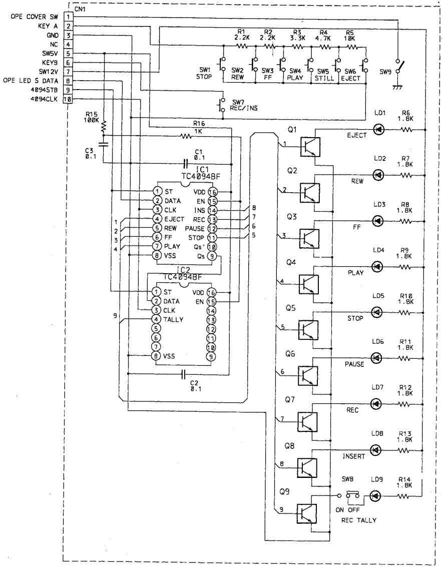
1 6 50PIN CONN.

50PIN CONNECTOR

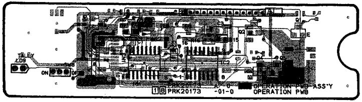
01		26	
02		27	START/STOP
03		28	
04		29	
05	GND	30	
06	GND	31	VTR SAVE
07		32	RETURN AUD
08		33	GND
09		34	
10		35	
11		36	
12		37	
13		38	EE
14	COLOR FLAME	39	12 V
15	AUD CH1 GND	40	12 V
16	(C)	41	Y IN
17	(H)	42	GND
18	RETURN Y	43	
19		44	
20	C IN	45	COMP.VIDEO
21	GND	46	GND
22		47	
23	AUD CH2 (C)	48	VTR STATUS
24	(H)	49	REC WARN
25	CAM P ON	50	BATT ALARM



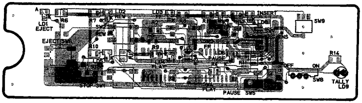
4.22 OPERATION SCHEMATIC DIAGRAM AND CIRCUIT BOARD


CN1
OPE COVER SW 1
KEY A 2
GND 3
NC 4
SW5V 5
KEYB 6
SW12V 7
OPE LED S DATA 8
4094STB 9
4094CLK 10
R1 2.2K
R2 2.2K
R3 3.3K
R4 4.7K
R5 10K
SW1 STOP
SW2 REW
SW3 FF
SW4 PLAY
SW5 STILL
SW6 EJECT
SW9
SW7 REC/INS
R15 100K
C3 0.1
R16 1K
C1 0.1
IC1 TC4094BF
1 ST
2 DATA
3 CLK
4 EJECT
5 REW
6 FF
7 PLAY
8 VSS
VDD 16
EN 15
INS 14
REC 13
PAUSE 12
STOP 11
Qs' 10
Qs 9
IC2 TC4094BF
1 ST
2 DATA
3 CLK
4 TALLY
8 VSS
VDD 16
EN 15
C2 0.1
Q1 EJECT LD1 R6 1.8K
Q2 REW LD2 R7 1.8K
Q3 FF LD3 R8 1.8K
Q4 PLAY LD4 R9 1.8K
Q5 STOP LD5 R10 1.8K
Q6 PAUSE LD6 R11 1.8K
Q7 REC LD7 R12 1.8K
Q8 INSERT LD8 R13 1.8K
Q9 SW8 LD9 R14 1.8K
ON OFF
REC TALLY

— SOLDER SIDE —


TALLY LD9
ON
SW8
OFF
IC2
Q1
Q2
C3
PRK20173
-01-0
OPERATION PWB ASS'Y
OPERATION PWB

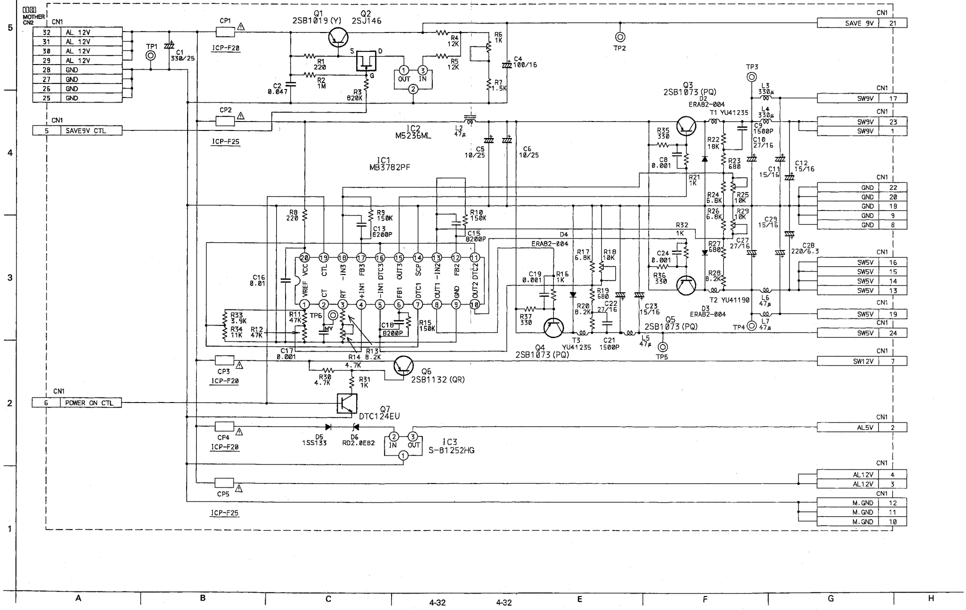
— PARTS SIDE —


LD1 EJECT
R6
R7
LD2
REW
LD3
INSERT
SW9
EJECT SW6
R10
R9
FF
PAUSE
PLAY
STOP SW1
PAUSE SW5
R14
OFF
ON
SW8
TALLY LD9

OPERATION BOARD

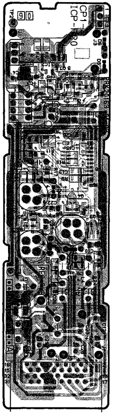
SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	0.0	0.1
	2	0.1	0.1
	3	0.1	0.1
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	5.2	5.2
	8	0.0	0.0
	9	0.1	0.1
	10	0.1	0.1
	11	0.0	0.0
	12	0.0	0.0
	13	5.2	0.0
	14	0.0	0.0
	15	5.2	5.2
	16	5.2	5.2
IC2	1	0.0	0.0
	2	0.1	0.1
	3	0.1	0.1
	4	5.2	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.0
	8	0.0	0.0
	9	0.1	0.1
	10	0.1	0.1
	11	0.0	0.0
	12	5.2	0.0
	13	0.0	0.0
	14	5.2	5.2
	15	5.2	5.2
	16	5.2	5.2
TRANSISTOR			
Q1	B	0.0	0.0
	C	11.0	11.0
	E	0.0	0.0
Q2	B	0.0	0.0
	C	11.0	11.0
	E	0.0	0.0
Q3	B	0.0	0.0
	C	11.0	11.0
	E	0.0	0.0
Q4	B	5.2	5.2
	C	0.1	0.1
	E	0.0	0.0
Q5	B	0.0	0.0
	C	11.0	11.0
	E	0.0	0.0
Q6	B	0.0	0.0
	C	11.0	11.0
	E	0.0	0.0
Q7	B	5.2	0.0
	C	0.1	11.0
	E	0.0	0.0
Q8	B	0.0	0.0
	C	11.0	11.0
	E	0.0	0.0
Q9	B	5.2	0.0
	C	0.1	11.0
	E	0.0	0.0
CONNECTOR			
CN1	1	5.1	5.1
	2	5.2	5.2
	3	0.0	0.0
	4	0.1	0.1
	5	5.2	5.2
	6	5.2	5.2
	7	12.3	12.3
	8	0.1	0.1
	9	0.0	0.0
	10	0.1	0.1

4.23 REGULATOR SCHEMATIC DIAGRAM

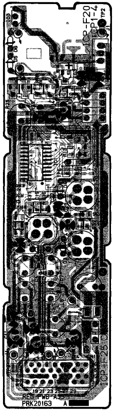

10
MOTHER CN2
CN1
32 AL 12V
31 AL 12V
30 AL 12V
29 AL 12V
28 GND
27 GND
26 GND
25 GND
5 SAVE9V CTL
6 POWER ON CTL
TP1
C1 330/25
CP1
ICP-F20
CP2
ICP-F25
CP3
ICP-F20
CP4
ICP-F20
CP5
ICP-F25
Q1 2SB1019(Y)
Q2 2SJ146
S
D
G
R1 220
R2 1M
C2 0.047
R3 820K
R4 12K
R5 12K
R6 1K
R7 1.5K
C4 100/16
OUT
IN
TP2
IC2 M5236ML
L2 47μ
C5 10/25
C6 10/25
IC1 MB3782PF
VCC
CTL
-IN3
FB3
DTC3
OUT3
SCP
-IN2
FB2
DTC2
VREF
CT
RT
+IN1
-IN1
FB1
DTC1
OUT1
GND
OUT2
R8 220
R9 150K
C13 8200P
R10 150K
C15 8200P
C16 0.01
R33 3.9K
R34 11K
R12 47K
R11 47K
TP6
MY
C17 0.001
R13 8.2K
R14 4.7K
C18 8200P
R15 150K
R30 4.7K
R31 1K
Q6 2SB1132(QR)
Q7 DTC124EU
D5 1SS133
D6 RD2.0EB2
IC3 S-81252HG
TP3
Q3 2SB1073(PQ)
D2 ERA82-004
T1 YU41235
L3 330μ
L4 330μ
C9 1500P
C10 27/16
R35 330
C8 0.001
R21 1K
R22 18K
R23 680
C11 15/16
C12 15/16
R24 6.8K
R25 10K
R26 6.8K
R29 10K
C29 15/16
R32 1K
D4 ERA82-004
R27 680
C27 27/16
C28 220/6.3
C24 0.001
R36 330
R28 8.2K
T2 YU41190
L6 47μ
D3 ERA82-004
TP4
L7 47μ
R17 6.8K
R18 10K
C19 0.001
R16 1K
R19 680
R20 8.2K
C22 27/16
C23 15/16
R37 330
Q4 2SB1073(PQ)
T3 YU41235
C21 1500P
L5 47μ
Q5 2SB1073(PQ)
TP5
SAVE 9V 21
SW9V 17
SW9V 23
SW9V 1
GND 22
GND 20
GND 18
GND 9
GND 8
SW5V 16
SW5V 15
SW5V 14
SW5V 13
SW5V 19
SW5V 24
SW12V 7
AL5V 2
AL12V 4
AL12V 3
M.GND 12
M.GND 11
M.GND 10
6
5
4
3
2
1
A
B
C
E
F
G
H

4.24 REGULATOR CIRCUIT BOARD

— SOLDER SIDE —



— PARTS SIDE —

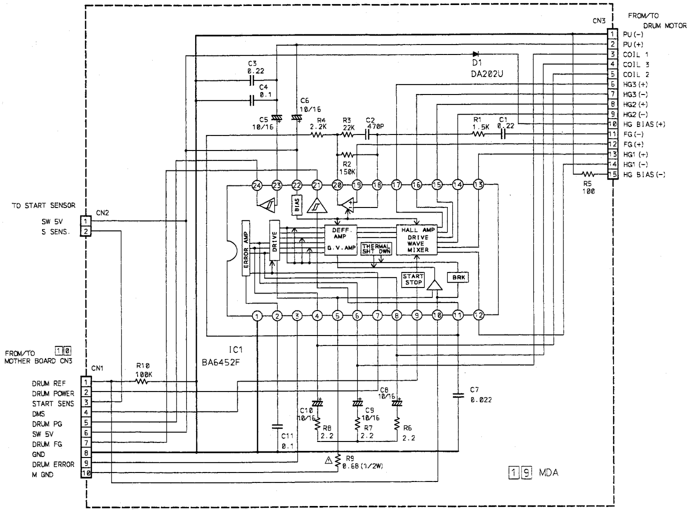


REGULATOR BOARD

SYMBOL	No.	REC	PB
INTEGRATED CIRCUIT			
IC1	1	2.5	2.5
	2	1.6	1.6
	3	1.3	1.3
	4	1.3	1.3
	5	1.3	1.3
	6	1.9	1.9
	7	1.9	1.9
	8	6.0	6.0
	9	0.0	0.0
	10	7.5	7.5
	11	1.9	1.9
	12	1.4	1.4
	13	1.3	1.3
	14	0.0	0.0
	15	4.1	4.1
	16	1.9	1.9
	17	1.6	1.6
	18	1.3	1.3
	19	4.8	4.8
	20	11.7	11.7
IC2	1	11.4	11.4
	2	0.0	0.0
	3	1.3	1.3
IC3	1	0.0	0.0
	2	9.8	9.8
	3	5.1	5.1
TRANSISTOR			
Q1	B	11.7	11.7
	C	9.1	9.1
	E	12.3	12.3
Q2	G	5.3	5.3
	D	11.4	11.4
	S	11.7	11.7
Q3	B	11.6	11.6
	C	9.2	9.2
	E	12.2	12.2
Q4	B	11.8	11.8
	C	5.4	5.4
	E	12.2	12.2
Q5	B	11.8	11.8
	C	5.3	5.3
	E	12.2	12.2
Q6	B	11.6	11.6
	C	12.3	12.3
	E	0.3	0.3
Q7	B	4.8	4.8
	C	0.1	0.1
	E	0.0	0.0

SYMBOL	No.	REC	PB
CONNECTOR			
CN1	1	9.0	9.0
	2	5.1	5.1
	3	12.3	12.4
	4	12.3	12.4
	5	0.1	0.1
	6	4.8	4.8
	7	12.3	12.3
	8	0.0	0.0
	9	0.0	0.0
	10	0.0	0.0
	11	0.0	0.0
	12	0.0	0.0
	13	5.2	5.2
	14	5.2	5.3
	15	5.2	5.3
	16	5.2	5.3
	17	9.1	9.1
	18	0.0	0.0
	19	5.3	5.3
	20	0.0	0.0
	21	9.1	9.1
	22	0.0	0.0
	23	9.0	9.0
	24	5.2	5.2
	25	0.0	0.0
	26	0.0	0.0
	27	0.0	0.0
	28	0.0	0.0
	29	12.4	12.4
	30	12.4	12.4
	31	12.4	12.4
	32	12.4	12.4

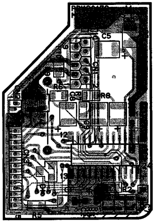
4.25 MDA SCHEMATIC DIAGRAM



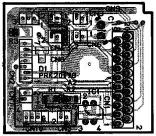
CN3
FROM/TO
DRUM MOTOR
1 PU (-)
2 PU (+)
3 COIL 1
4 COIL 3
5 COIL 2
6 HG3 (+)
7 HG3 (-)
8 HG2 (+)
9 HG2 (-)
10 HG BIAS (+)
11 FG (-)
12 FG (+)
13 HG1 (+)
14 HG1 (-)
15 HG BIAS (-)
D1
DA202U
C3
0.22
C4
0.1
C6
10/16
C5
10/16
R4
2.2K
R3
22K
C2
470P
R1
1.5K
C1
0.22
R2
150K
R5
100
TO START SENSOR
CN2
SW 5V
S SENS.
BIAS
DEFF. AMP
B.V. AMP
THERMAL SHT DWN
HALL AMP
DRIVE
WAVE
MIXER
ERROR AMP
DRIVE
START STOP
BRK
IC1
BA6452F
FROM/TO
MOTHER BOARD CN3
10
CN1
R10
100K
1 DRUM REF
2 DRUM POWER
3 START SENS
4 DMS
5 DRUM PG
6 SW 5V
7 DRUM FG
8 GND
9 DRUM ERROR
10 M GND
C11
0.1
C10
10/16
R8
2.2
C9
10/16
R7
2.2
C8
10/16
R6
2.2
R9
0.68 (1/2W)
C7
0.022
19 MDA

4.26 MODE SENSOR, MDA, MECHA IF, MECHA JUNC, END SENSOR, START SENSOR, MDA JUNC, POWER SW, A/C HEAD, REEL SENSOR CIRCUIT BOARDS

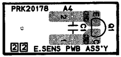
— MDA —


C5
CN1
R6
R8
12
13
R2
R5

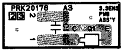
— M. IF —


CN8
CN5
R3
CN4
CN6
CN3
D1
PRK20176
A2
R1
R2
IC1
CN1
CN2
CN10
CN9
3
4
2

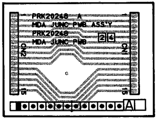
— END SENSOR —


PRK20178 A4
C1
Q1
2 2 E.SENS PWB ASS'Y

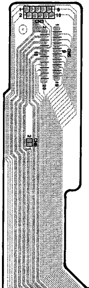
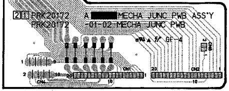
— START SENSOR —


PRK20178 A3
2 3
S.SENS PWB ASS'Y
C1
Q1

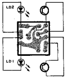
— MDA JUNC —


PRK20248 A
MDA JUNC PWB ASS'Y
PRK20248
MDA JUNC PWB
2 4
CN2
CN1
A

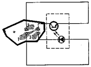
— MECHA JUNC —



CN3
2 1 PRK20172 A MECHA JUNC PWB ASS'Y
PRK20172 -01-02 MECHA JUNC PWB
GF-4
CN1
CN2
CN4
20
10
1
2

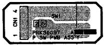
— MODE SENSOR —



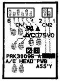
— REEL SENSOR —



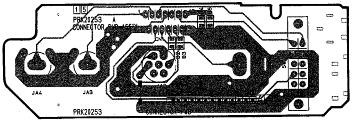
— POWER SW —


CN1
SW1
2 5
PRK30097 A
P SW PWB ASS'Y

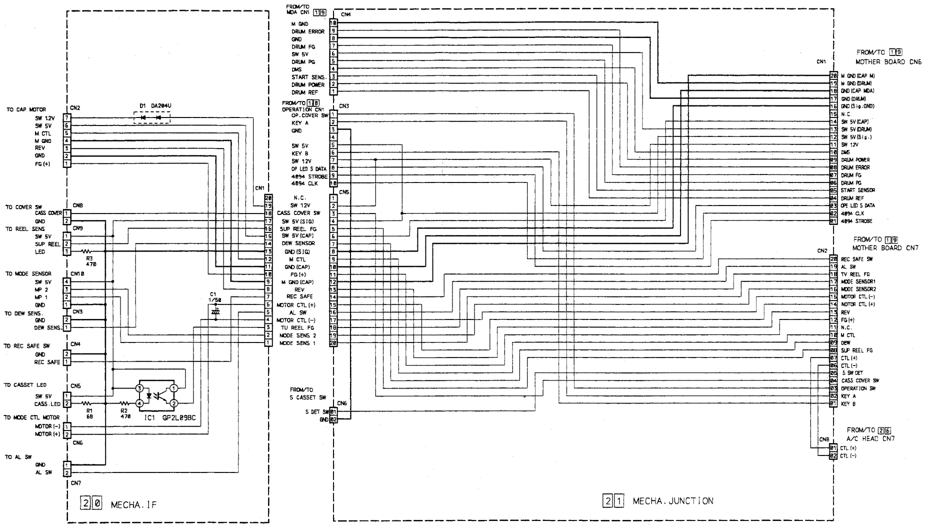
— A/C HEAD —


CN1
CN2
JVC075V0
2 8
PRK30096 A
A/C HEAD PWB ASS'Y

4.27 CONNECTOR CIRCUIT BOARD

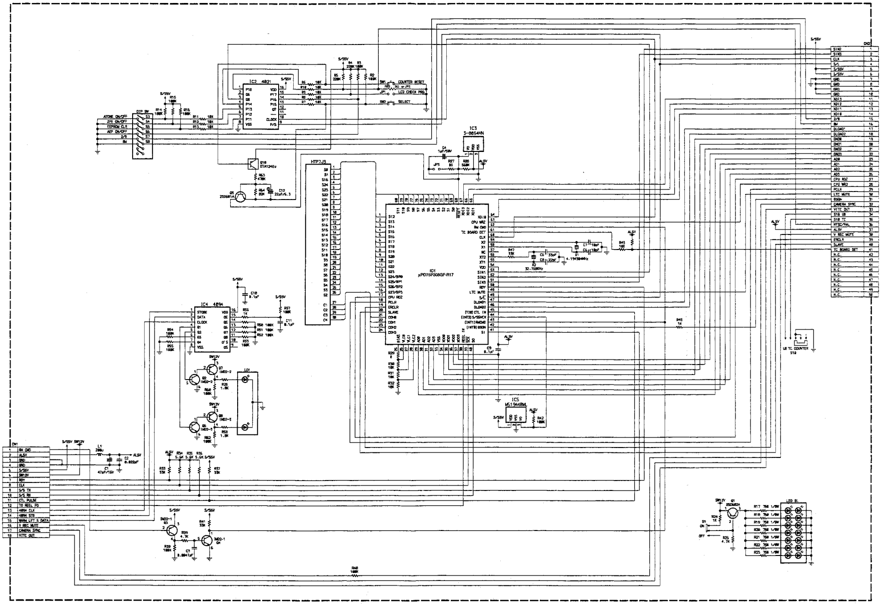

1 5
PRK20253 A
CONNECTOR PWB ASS'Y
CN1
JA4
JA3
PRK20253
CONNECTOR PWB

4.28 MECHA IF, MECHA JUNC SCHEMATIC DIAGRAM


TO CAP MOTOR
CN2
SW 12V
SW 5V
M CTL
M GND
REV
GND
FG (+)
D1 DA204U
CN1
TO COVER SW
CN8
CASS COVER
GND
TO REEL SENS
CN9
SW 5V
SUP REEL
LED
R3
470
TO MODE SENSOR
CN10
SW 5V
MP 2
MP 1
GND
TO DEW SENS.
CN3
GND
DEW SENS.
C1
1/50
TO REC SAFE SW
CN4
GND
REC SAFE
TO CASSET LED
CN5
SW 5V
CASS.LED
R1
68
R2
470
IC1 GP2L09BC
TO MODE CTL MOTOR
MOTOR (-)
MOTOR (+)
CN6
TO AL SW
GND
AL SW
CN7
20 MECHA.IF
FROM/TO MDA CN1 19
CN4
M GND
DRUM ERROR
GND
DRUM FG
SW 5V
DRUM PG
DMS
START SENS.
DRUM POWER
DRUM REF
FROM/TO 18 OPERATION CN1
CN3
OP.COVER SW
KEY A
GND
SW 5V
KEY B
SW 12V
OP LED S DATA
4094 STROBE
4094 CLK
CN5
N.C.
SW 12V
CASS COVER SW
SW 5V (SIG)
SUP REEL FG
SW 5V (CAP)
DEW SENSOR
GND (SIG)
M CTL
GND (CAP)
FG (+)
M GND (CAP)
REV
REC SAFE
MOTOR CTL (+)
AL SW
MOTOR CTL (-)
TU REEL FG
MODE SENS 2
MODE SENS 1
FROM/TO S CASSET SW
CN6
S DET SW
GND
FROM/TO 19 MOTHER BOARD CN6
CN1
M GND (CAP M)
M GND (DRUM)
GND (CAP MDA)
GND (DRUM)
GND (Sig.GND)
N.C
SW 5V (CAP)
SW 5V (DRUM)
SW 5V (Sig.)
SW 12V
DMS
DRUM POWER
DRUM ERROR
DRUM FG
DRUM PG
START SENSOR
DRUM REF
OPE LED S DATA
4094 CLK
4094 STROBE
FROM/TO 19 MOTHER BOARD CN7
CN2
REC SAFE SW
AL SW
TV REEL FG
MODE SENSOR1
MODE SENSOR2
MOTOR CTL (-)
MOTOR CTL (+)
REV
FG (+)
N.C.
M CTL
DEW
SUP REEL FG
CTL (+)
CTL (-)
S SW DET
CASS COVER SW
OPERATION SW
KEY A
KEY B
FROM/TO 26 A/C HEAD CN7
CN8
CTL (+)
CTL (-)
21 MECHA.JUNCTION

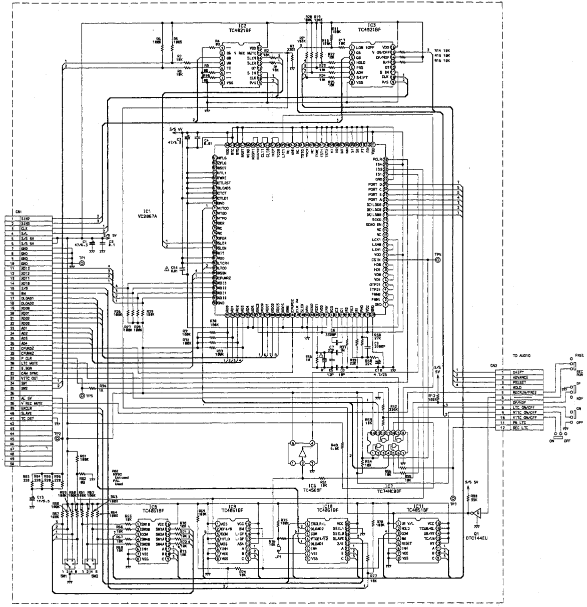
4.29 LCD SCHEMATIC DIAGRAM

- Use this Schematic Diagram just for a reference, please. Only the Display Assy will be supplied as service part.



IC1
µPD75P308GF-R17
IC2 4021
IC3
S-8054HN
IC4 4094
IC5
M51944BML
HTP7J3
LD1
DIP SW
ATONE ON/OFF
ZPE ON/OFF
EEPROM CLR
AEF ON/OFF
2/8
BW
SW1 COUNTER RESET
LCD CHECK PRG
SW2 SELECT
Q10
DTA124EU
Q9
2SD601A
X1
4.194304MHz
X2
32.768KHz
LED BL
UB TC COUNTER
CN1
1 RH CMD
2 AL5V
3 GND
4 GND
5 S/S5V
6 SW12V
7 RDY
8 CLK
9 S/S TX
10 S/S RX
11 CTL PULSE
12 TO REEL FG
13 4094 CLK
14 4094 STB
15 WARN LFT S DATA
16 V REC MUTE
17 CAMERA SYNC
18 VITC OUT
CN2
SIN2 1
SIN3 2
CLK 3
S/L 4
S/S5V 5
S/S5V 6
GND 7
GND 8
GND 9
GND 10
XO13 11
XO12 12
XO11 13
XO10 14
2/8 15
BW 16
DLOAD1 17
DLOAD2 18
DXO0 19
DXO1 20
DXO2 21
DXO3 22
AD0 23
AD1 24
AD2 25
AD3 26
CPU RD2 27
CPU WR2 28
PCLR 29
LTC MUTE 30
BSGN 31
CAMERA SYNC 32
VITC OUT 33
S18 UB 34
S18 TC 35
NTSC/PAL 36
AL5V 37
V REC MUTE 38
ERCLR 39
SLAVE 40
TC BOARD DET 41
N.C. 42
N.C. 43
N.C. 44
N.C. 45
N.C. 46
N.C. 47
N.C. 48
N.C. 49
N.C. 50

4.30 TIME CODE SCHEMATIC DIAGRAM (SA-R200E OPTION)



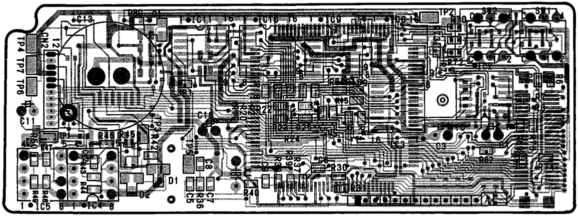
IC1
VC2067A
IC2
TC4021BF
IC3
TC4021BF
IC6
TC4S69F
IC7
TC74HC08F
IC8
TC4051BF
IC9
TC4051BF
IC10
TC4051BF
IC11
TC4051BF
Q1
DTC144EU
CN1
1 SIN2
2 SIN3
3 CLK
4 S/L
5 S/S 5V
6 S/S 5V
7 GND
8 GND
9 GND
10 GND
11 XD13
12 XD12
13 XD11
14 XD10
15 2/8
16 BM
17 DLOAD1
18 DLOAD2
19 XD00
20 XD01
21 XD02
22 XD03
23 AD1
24 AD2
25 AD3
26 AD4
27 CPURDZ
28 CPUWRZ
29 P CLR
30 LTC MUTE
31 B.SGN
32 CAM SYNC
33 VITC OUT
34 SW1
35 SW2
36
37 AL 5V
38 V REC MUTE
39 ERCLR
40 SLAVE
41 TC DET
42
43
44
45
46
47
48
49
50
TO AUDIO
CN2
1 SHIFT
2 ADVANCE
3 PRESET
4 HOLD
5 RECRUN/FREE
6 ———
7 DF/NDF
8 LTC ON/OFF
9 VITC ON/OFF
10 VITC ON/OFF
11 PB LTC
12 REC LTC
FREE
REC RUN
DF
NDF
ON
OFF
ON
OFF
S/S 5V
TP1
TP2
TP3
TP5
TP7
SW1
SW2
JP1

6

4.31 TIME CODE CIRCUIT BOARD (SA-R200E OPTION)

5

— SOLDER SIDE —

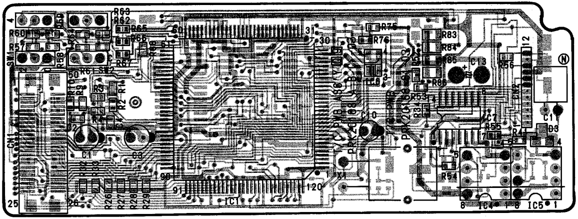


TP4
TP7
TP6
CN2
12
C13
R80
IC11
IC10
IC9
IC8
TP2
SW2
SW1
R70
R72
C11
TP1
R46
R45
R42
TP3
C16
R18
R22
R20
R24
R15
R37
R30
R31
R40
C8
C5
C7
R36
D1
D2
IC5
IC4
C3
R62
R47
R43
R44
R48

4

3

— PARTS SIDE —



4
R63
R62
R65
R66
R60
R57
R58
R61
SW1
SW2
R67
50
51
31
30
R75
R76
R83
R84
R85
R86
C13
R56
12
N
R10
R9
R3
R1
R2
R4
C1
C3
C10
CN1
CN2
R53
R34
C11
D3
R55
R4
R54
IC6
X1
90
91
120
IC1
25
26
R26
R27
R28
R29
IC4
IC5
8
1

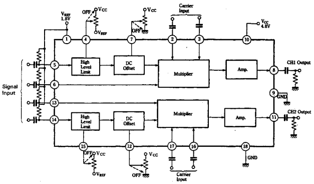
2

1

A B C 4-39 4-39 E F G H

4.32 IC BLOCK DIAGRAM

■ AN2020S 【MATSUSHITA】
(Dual Balanced Modulator)

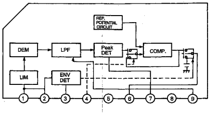


VREF 1.8V
OFF
Vcc
VREF
Carrier Input
Vcc 4.8V
Signal Input
High Level Limit
DC Offset
Multiplier
Amp.
CH1 Output
GND
CH2 Output
OFF
Vcc
VREF
Carrier Input
GND

■ **Pin function**

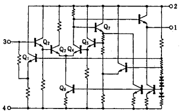
Pin No.	Pin Name	Pin No.	Pin Name
1	V_{REF} (1.8V)	10	V_{CC} (4.8V)
2	CH1 Carrier Input 1	11	CH2 Output
3	CH1 Carrier Input 2	12	CH2 DC Offset
4	CH1 High Level Limit	13	CH2 Signal Input 2
5	CH1 Signal Input 1	14	CH2 Signal Input 1
6	CH1 Signal Input 2	15	CH2 High Level Limit
7	CH1 DC Offset	16	CH2 Carrier Input 2
8	CH1 Output	17	CH2 Carrier Input 1
9	GND	18	GND

■ AN3398 【MATSUSHITA】
(VTR S-VHS Detector)



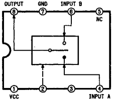
REF. POTENTIAL CIRCUIT
DEM
LPF
Peak DET
COMP.
LIM
ENV DET
1
2
3
4
5
6
7
8
9

■ AN608P 【MATSUSHITA】
(Amp.)



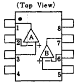
2
1
3
4
Q1
Q2
Q3
Q4
Q5
Q6
Q7

■ AN6308S 【MATSUSHITA】
(VTR Analog Switch)



OUTPUT
GND
INPUT B
NC
VCC
INPUT A
8
7
6
5
1
2
3
4

■ BA10393F 【ROHM】
(Dual Comparator)

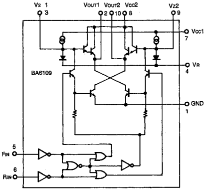


(Top View)
A
B
1
2
3
4
5
6
7
8

Pin
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

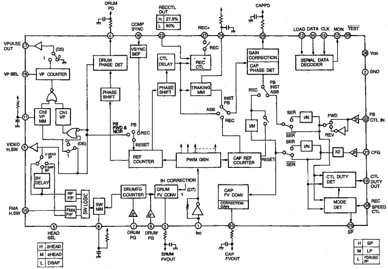
■ BA6109U2 【ROHM】
(Reversible Motor Driver)

BLOCK DIAGRAM



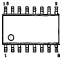
Vz 1
3
VOUT1
VOUT2
Vcc2
2
10
8
Vz2
9
Vcc1
7
VR
4
BA6109
GND
1
5
FIN
6
RIN

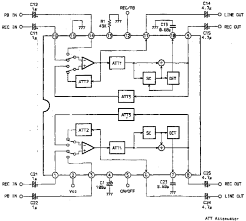
■ BU3779S 【ROHM】
(VTR Digital Servo Circuit)



DRUM PD
RECCTL OUT
H 27.5%
L 60%
COMP SYNC
REC+
CAPPD
LOAD
DATA
CLK
MON
TEST
VPULSE OUT
(D5)
VP SEL
VP COUNTER
DRUM PHASE DET
VSYNC SEP
CTL DELAY
REC CTL
REC
GAIN CORRECTION
CAP PHASE DET
SERIAL DATA DECODER
VDD
GND
PHASE SHIFT
PHASE SHIFT
TRAKING MM
PB INST ASB
INST PB
ASB
REC
Ch2 VP MM
Ch1 VP
PB FWD & NOR
PB
REC
RESET
I/M
SER
I/N
FWD
REV
PB CTL IN
(D6)
VIDEO H.SW
4 HEAD SP
D GAP SP
2H DELAY
REF COUNTER
PWM GEN
CAP REF COUNTER
RESET
SER
I/N
X2
CFG
CTL DUTY DET
CTL DUTY OUT
fH CORRECTION
(D7)
DRUMFG COUNTER
DRUM FV CONV
CAP FV CONV
CORRECTION GAIN
MODE DET
REC SPEED CTL
RF F/F
FMA F/F
SW LOGIC
SW MM
FMA H.SW
HEAD SEL
DRUM PG
DRUM FG
fsc
SP
H 2HEAD
M 4HEAD
L DGAP
DRUM FVOUT
CAP FVOUT
H SP
M LP
L FORCED SP

■ CXA1102M 【SONY】
(Dolby Noise Reduction Circuit)



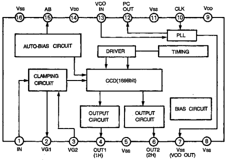


C12 1μ
PB IN
REC IN
C11 1μ
R1 43K
REC/PB
C13 0.68μ
C14 4.7μ
LINE OUT
REC OUT
C15 4.7μ
ATT1
ATT2
ATT3
SC
DET
C21 1μ
REC IN
PB IN
C22 1μ
Vcc
C1 100μ
ON/OFF
C23 0.68μ
C25 4.7μ
REC OUT
LINE OUT
C24 4.7μ

ATT Attenuator
SC Side Chain
DET Detector

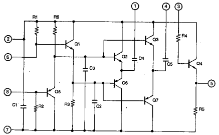
■ CXL1506M 【SONY】
(CMOS CCD 1H/2H Delay Line)

BLOCK DIAGRAM



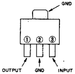
VSS
AB
VDD
VCO IN
PC OUT
VSS
CLK
VDD
16
15
14
13
12
11
10
9
PLL
AUTO-BIAS CIRCUIT
DRIVER
TIMING
CLAMPING CIRCUIT
CCD(1698bit)
OUTPUT CIRCUIT
OUTPUT CIRCUIT
BIAS CIRCUIT
1
2
3
4
5
6
7
8
IN
VG1
VG2
OUT1 (1H)
VSS
OUT2 (2H)
VSS (VCO OUT)
VSS

■ JCL0007 【JVC】
(Limiter circuit)



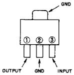
①
④
③
R1
R6
R4
Q1
Q2
Q3
Q4
Q5
Q6
Q7
C1
C2
C3
C4
C5
R2
R3
R5
②
⑥
⑧
⑦
⑤

■ M5237ML 【MITSUBISHI】
(Votage Regulator)



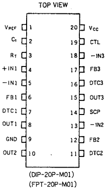
GND
① ② ③
OUTPUT
GND
INPUT

■ M5278L05M 【MITSUBISHI】
(Three Terminal Negative Voltage Regulator)

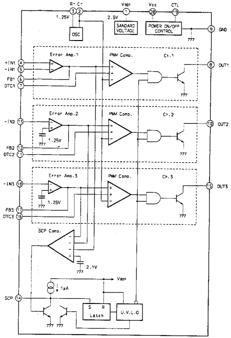


GND
① ② ③
OUTPUT
GND
INPUT

■ MB3782PF 【FUJITSU】
(Switching Regulator Controller)

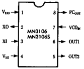


TOP VIEW
VREF 1
CT 2
RT 3
+IN1 4
−IN1 5
FB1 6
DTC1 7
OUT1 8
GND 9
OUT2 10
20 Vcc
19 CTL
18 −IN3
17 FB3
16 DTC3
15 OUT3
14 SCP
13 −IN2
12 FB2
11 DTC2
(DIP-20P-M01)
(FPT-20P-M01)

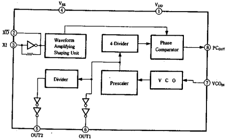


RT CT
VREF
Vcc
CTL
1.25V
2.5V
OSC
SANDARD VOLTAGE
POWER ON/OFF CONTROL
GND
Error Amp.1
PWM Comp.
Ch.1
+IN1 ④
−IN1 ⑤
FB1 ⑥
DTC1 ⑦
OUT1
Error Amp.2
PWM Comp.
Ch.2
−IN2 ⑬
1.25V
FB2 ⑫
DTC2 ⑪
OUT2
Error Amp.3
PWM Comp.
Ch.3
−IN3 ⑱
1.25V
FB3 ⑰
DTC3 ⑯
OUT3
SCP Comp.
2.1V
VREF
1μA
SCP ⑭
S R
Latch
U.V.L.O

■ MN3106S 【MATSUSHITA】
(Clock Pulse Generator)

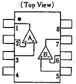


VDD 1
XO 2
XI 3
VSS 4
8 PCOUT
7 VCOIN
6 OUT1
5 OUT2
MN3106
MN3106S



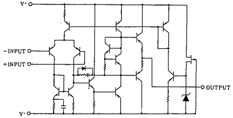
VSS ④
VDD ①
XO ②
XI ③
Waveform Amplifying Shaping Unit
4-Divider
Phase Comparator
⑧ PCOUT
Divider
Prescaler
V C O
⑦ VCOIN
⑤ OUT2
⑥ OUT1

■ NJM2068MD 【JRC】
(Dual Low-Noise Op.Amplifier)



(Top View)
1
2
3
4
5
6
7
8
A
B

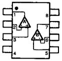
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺



V⁺
−INPUT
+INPUT
OUTPUT
V⁻

■ NJM2903M 【JRC】
(Dual Single Supply Comparator)

D, M Type
(Top View)

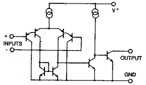


1
2
3
4
5
6
7
8
A
B

Pin Assignment

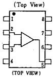
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. GND
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

■ Equivalent Circuit (2 circuits in a chip)



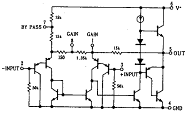
V⁺
+
INPUTS
−
OUTPUT
GND

■ NJM386M 【JRC】
(Low Voltage Audio Power Amplifier)



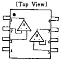
(Top View)
1
2
3
4
5
6
7
8
(TOP VIEW)

1. GAIN
2. −INPUT
3. +INPUT
4. GND
5. OUTPUT
6. V⁺
7. BY PASS
8. GAIN



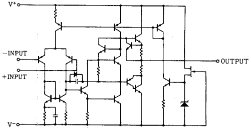
6 V⁺
15k
7
BY PASS
15k
GAIN 8
GAIN 1
150
1.35k
15k
5 OUTPUT
2
−INPUT
3
+INPUT
50k
50k
4 GND

■ NJM4556MB 【JRC】
(Dual High Current Op.Amplifier)



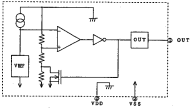
(Top View)
1
2
3
4
5
6
7
8
A
B

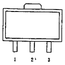
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺



V⁺
−INPUT
+INPUT
OUTPUT
V⁻

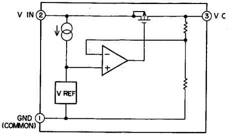
■ S-8054HN-CB-X 【SEIKO】
(Voltage Detecter)

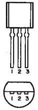

OUT
OUT
VREF
VDD
VSS



1. OUT
2. VDD
3. VSS

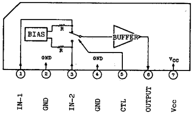
■ S-81252HG 【SEIKO INSTRUMENTS】
(Voltage Detector)


V IN ②
③ V C
V REF
GND ①
(COMMON)

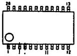


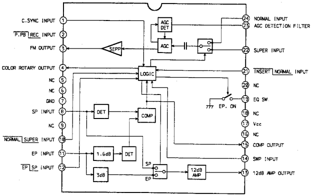
1 GND
2 V IN
3 V OUT

■ TA7347P 【TOSHIBA】
(2-Input Switch)

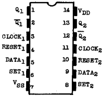

BIAS
R
R
R
BUFFER
GND
GND
Vcc
①
②
③
④
⑤
⑥
⑦
IN-1
GND
IN-2
GND
CTL
OUTPUT
Vcc

■ TA8733F 【TOSHIBA】
(VTR FM Signal Processor)

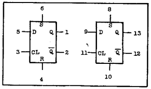



C.SYNC INPUT ①
P.PB/REC INPUT ②
FM OUTPUT ③
COLOR ROTARY OUTPUT ④
NC ⑤
NC ⑥
GND ⑦
SP INPUT ⑧
NC ⑨
NORMAL/SUPER INPUT ⑩
EP INPUT ⑪
EP/SP INPUT ⑫
㉔ NORMAL INPUT
㉓ AGC DETECTION FILTER
㉒ SUPER INPUT
㉑ INSERT/NORMAL INPUT
⑳ NC
⑲ EQ SW
⑱ NC
⑰ Vcc
⑯ NC
⑮ COMP OUTPUT
⑭ SWP INPUT
⑬ 12dB AMP OUTPUT
AGC DET
AGC
SEPP
LOGIC
EP. ON
DET
COMP
1.6dB
DET
3dB
SP
EP
12dB AMP

■ TC4013BF 【TOSHIBA】
(Dual D-Type Flip Flop)


Q1 1
Q̄1 2
CLOCK1 3
RESET1 4
DATA1 5
SET1 6
VSS 7
14 VDD
13 Q2
12 Q̄2
11 CLOCK2
10 RESET2
9 DATA2
8 SET2

(TOP VIEW)

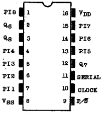

6
8
S
S
5
D
Q
1
9
D
Q
13
3
CL
Q̄
2
11
CL
Q̄
12
R
R
4
10

TRUTH TABLE

INPUTS				OUTPUTS	
RESET	SET	DATA	CLOCK △	Qn+1	Q̄n+1
L	H	✱	✱	H	L
H	L	✱	✱	L	H
H	H	✱	✱	H	H
L	L	L	_⌐	L	H
L	L	H	_⌐	H	L
L	L	✱	¬_	Qn•	Q̄n•

✱ : Don't Care
△ : Level Change
• : No Change

■ TC4021BF 【TOSHIBA】
(8 Stage Static Shift Register)

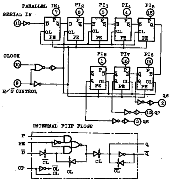

PI8 1
Q6 2
Q8 3
PI4 4
PI3 5
PI2 6
PI1 7
VSS 8
16 VDD
15 PI7
14 PI6
13 PI5
12 Q7
11 SERIAL IN
10 CLOCK
9 P/S̄

(TOP VIEW)

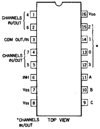
TRUTH TABLE

INPUTS					OUTPUTS △	
CLOCK ΔΔ	P/S̄	PI1	PIn	SI	Q1	Qn
_⌐	L	✱	✱	L	L	Qn-1
_⌐	L	✱	✱	H	H	Qn-1
¬_	L	✱	✱	✱	No Change	
✱	H	L	L	✱	L	L
✱	H	L	H	✱	L	H
✱	H	H	L	✱	H	L
✱	H	H	H	✱	H	H

n ; 2 ~ 8
Δ ; $Q_1 \sim Q_5$ Internal
ΔΔ ; Level
✱ ; Don't Care

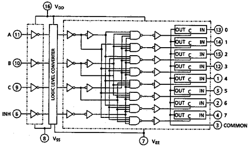

PARALLEL IN1
PI2
PI3
PI4
PI5
⑦
⑥
⑤
④
⑬
SERIAL IN
⑪
PI8
PI7
PI6
①
⑮
⑭
CLOCK
⑩
⑨
P/S̄ CONTROL
Q6 ②
⑫ Q7
③ Q8
INTERNAL FLIP FLOPS
P
PE
D̄
CP
CL
CL
CL
CL
Q
Q̄

■ TC4051BF 【TOSHIBA】
(Single 8 Channel Analog Multiplexers/ Demultiplexers)

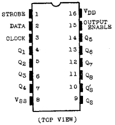

CHANNELS IN/OUT 4 1
6 2
COM OUT/IN 3
CHANNELS IN/OUT 7 4
5 5
INH 6
VEE 7
VSS 8
16 VDD
15 2
14 1
13 0
12 3
11 A
10 B
9 C
*CHANNELS IN/OUT
TOP VIEW

CONTROL INPUTS				"ON" CHANNEL
INHIBIT	C△	B	A	4051
L	L	L	L	0
L	L	L	H	1
L	L	H	L	2
L	L	H	H	3
L	H	L	L	4
L	H	L	H	5
L	H	H	L	6
L	H	H	H	7
H	✱	✱	✱	NONE

✱ Don't Care.

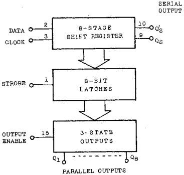

⑯ VDD
A ⑪
B ⑩
C ⑨
INH ⑥
LOGIC LEVEL CONVERTER
OUT C IN ⑬ 0
OUT C IN ⑭ 1
OUT C IN ⑮ 2
OUT C IN ⑫ 3
OUT C IN ① 4
OUT C IN ⑤ 5
OUT C IN ② 6
OUT C IN ④ 7
③ COMMON
⑧ VSS
⑦ VEE

■ TC4094BF 〔TOSHIBA〕
(8 Stage Bus Compatible Shift/Store Register)

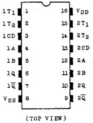

STROBE 1
DATA 2
CLOCK 3
Q1 4
Q2 5
Q3 6
Q4 7
VSS 8
16 VDD
15 OUTPUT ENABLE
14 Q5
13 Q6
12 Q7
11 Q8
10 Q'S
9 QS
(TOP VIEW)

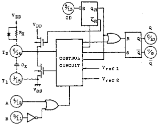
CL	OE	ST	D	PO		SO	
				Q_1	Q_n	Q_S	Q'_S
↑	H	H	L	L	Q_{n-1}	Q_7	NC
↑	H	H	H	H	Q_{n-1}	Q_7	NC
↑	H	L	*	NC	NC	Q_7	NC
↑	L	*	*	HZ	HZ	Q_7	NC
↓	H	*	*	NC	NC	NC	Q_S
↓	L	*	*	HZ	HZ	NC	Q_S

CL = Clock
OE = Output Enable
ST = Strobe
D = Data
PO = Parallel Outputs
SO = Serial Output
* = Don't care
NC = No Change
HZ = High Impedance


SERIAL OUTPUT
DATA 2
CLOCK 3
8-STAGE SHIFT REGISTER
10 Q'S
9 QS
STROBE 1
8-BIT LATCHES
OUTPUT ENABLE 15
3-STATE OUTPUTS
Q1
Q8
PARALLEL OUTPUTS

■ TC4538BF 〔TOSHIBA〕
(Dual Precision Monostable Multivibrator)


1T1 1
1T2 2
1CD 3
1A 4
1B 5
1Q 6
1Q̄ 7
VSS 8
16 VDD
15 2T1
14 2T2
13 2CD
12 2A
11 2B
10 2Q
9 2Q̄
(TOP VIEW)

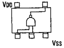

VDD
RX
VDD
T2 2/14
CX
T1 1/15
VSS
3/13 CD
S QR
Q̄R
CONTROL CIRCUIT
Vref 1
Vref 2
R Q
S Q̄
Q 6/10
7/9 Q̄
A 4/12
B 5/11

TRUTH TABLE

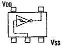
INPUT			OUTPUT		NOTE
A	B	CD	Q	Q̄	
↑	H	H	⊓	⊔	OUTPUT ENABLE
↑	L	H	L	H	INHIBIT
H	↓	H	L	H	INHIBIT
L	↓	H	⊓	⊔	OUTPUT ENABLE
*	*	L	L	H	INHIBIT

* Don't Care

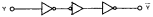
■ TC4S11F 〔TOSHIBA〕
(2 Input Single NAND Gate)

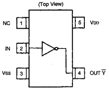


■ TC4S584F 〔TOSHIBA〕
(Schmitt Triggerd Single Inverte Gate)



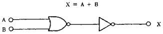
■ TC4S69F 〔TOSHIBA〕
(Inverter Gate)

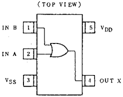



(Top View)
NC 1
IN 2
Vss 3
5 VDD
4 OUT Ȳ

■ TC4S71F 〔TOSHIBA〕
(2-Input OR Gate)

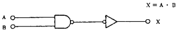
X = A + B

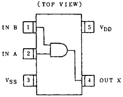



(TOP VIEW)
IN B 1
IN A 2
VSS 3
5 VDD
4 OUT X

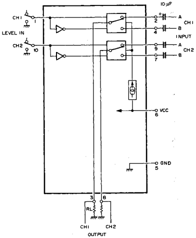
■ TC4S81F 〔TOSHIBA〕
(2-Input AND Gate)

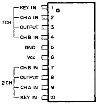
X = A · B



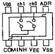

(TOP VIEW)
IN B 1
IN A 2
VSS 3
5 VDD
4 OUT X

■ TK15021 〔TOKO-DENSHI〕
(Analog Switch)

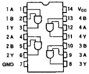

10μF
CH1
LEVEL IN
CH2
1
10
2
4
9
7
A
B
CH1
INPUT
A
B
CH2
VCC
6
GND
5
3
8
RL
CH1
CH2
OUTPUT


1CH
KEY IN 1
CH A IN 2
OUTPUT 3
CH B IN 4
GND 5
Vcc 6
2CH
CH B IN 7
OUTPUT 8
CH A IN 9
KEY IN 10

■ TC4W53F 〔TOSHIBA〕
(Multiplexer)


VDD ch1 ch0 ADR
COM INH VEE Vss

■ TC74HC08AF 〔TOSHIBA〕
(Quad 2-Input AND Gates)

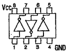

1A 1
1B 2
1Y 3
2A 4
2B 5
2Y 6
GND 7
14 Vcc
13 4B
12 4A
11 4Y
10 3B
9 3A
8 3Y

(TOP VIEW)

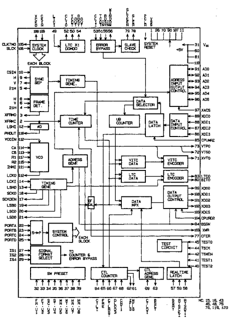
TRUE Table

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ TC7W04F 〔TOSHIBA〕
(Triple Inverter Gate)

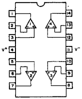

Vcc 8
7
6
5
1
2
3
4 GND

■ VC2067A 【JVC】
(Time Code Controller)

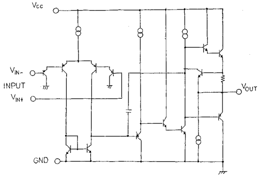


SYSTEM CLOCK
EACH BLOCK
LTC X1 DCMOD
ERROR BYPASS
SLAVE CHECK
SYSTEM RESET
+5V
Vcc
SYNC SEP
TIMING GENE.
FRAME DET.
#D
ADRESS INPUT OUTPUT CONTROL
DATA SELECTOR
TIME CUNTER
UB COUNTER
DATA LATCH
DATA INPUT CONTROL
VCO
ADRESS GENE
VITC DATA
VITC ENCODER
LTC DATA
LTC ENCODER
TIMING GENE
DF CAL
DATA MPX
DATA OUTPUT CONTROL
S→P
SYSTEM CONTROL
EACH BLOCK
TEST CIRCUIT
SIGNAL FORMAT SELECT
TO COUNTER & ERROR BYPASS
SW PRESET
CTL COUNTER
CTL ADRESS GENE
REALTIME LATCH
CLK7MO 105
SLCK 106
CSIN 10
H 9
V 7
21H 5
H 8
V 6
21H 4
XFRMO 3
XFRMI 2
LSHI 12
PHOUT 116
VCOIN 112
CA 114
CB 113
R1 117
R2 115
INHI 111
LCKO 112
LCKI 14
LSHO 13
SCKO 18
SCKOEN 17
LSBO 19
LSCO 20
LSDO 21
PORTA 22
PORTB 23
PORTC 24
PORTD 25
IS1 27
IS2 28
IS4 29
31 Vcc
50
81
110
91 AD0
92 AD1
93 AD2
94 AD3
95 AD4
96 AD5
97 XACS
89 XDI0
88 XDI1
87 XDI2
86 XDI3
85 CPUWRZ
73 VTPO
72 VTGO
71 XVTO
83 LTCO
80 BITO
99 XDO0
100 XDO1
101 XDO2
102 XDO3
103 XDCS
104 CPURD2
84 BSGN
103 XWR
77 CFER
45 TESTO
44 TSCK
42 TSMEN
41 TEST1
40 TEST2
108 109 49 52 50 54 53 51 55 56 79 78
1 26 70 90 107 11
32 33 34 35 36 37 38 39
64 65 66 67 68 62 61
69 63
57 59 58
NC: 15, 16, 43, 45, 48, 75, 76, 119, 120

■ XRA10324F 【EXRA】
(Op.Amp)

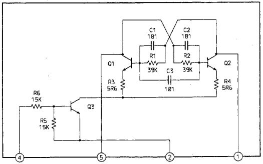


1
2
3
V⁺ 4
5
6
7
14
13
12
11 V⁻
10
9
8
1
2
3
4



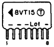
Vcc
VIN-
INPUT
VIN+
VOUT
GND

■ 5VT51 【JVC】
(Oscillator)

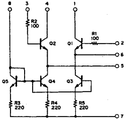


C1
181
C2
181
R1
R2
Q1
39K
C3
39K
Q2
R3
5R6
101
R4
5R6
R6
15K
Q3
R5
15K
4
5
2
1

■ 8VT15 【JVC】
(Driver)



8VT15 Ⓣ
Lot
1
8



8
3
4
1
R2
100
Q2
Q1
R1
100
2
6
5
Q5
Q4
Q3
R3
220
R4
220
R5
220
7

4-44

SECTION 5
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety.
Replace only with specified part numbers.

Page

5.1 STANDARD PART NUMBER CODING

5.1.1 Screw coding 5-2

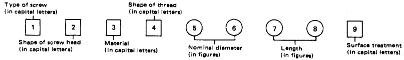
5.2 EXPLODED VIEWS AND PARTS LIST

5.2.1 Packing assembly 5-3
5.2.2 Cabinet assembly 5-4
5.2.3 Chassis assembly 5-6
5.2.4 Mechanism assembly 5-8
5.2.5 Right side cover assembly 5-10
5.2.6 Connector box assembly 5-10
5.2.7 Battery holder assembly 5-12

5.1 STANDARD PART NUMBER CODING

5.1.1 Screw coding

Standard screw part numbers are as follows.

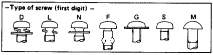

Type of screw
(in capital letters)
Shape of thread
(in capital letters)
1
2
3
4
5
6
7
8
9
Shape of screw head
(in capital letters)
Material
(in capital letters)
Nominal diameter
(in figures)
Length
(in figures)
Surface treatment
(in capital letters)

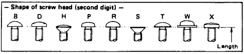
Type of screw (first digit)

S	Normal screws
D	Assembled machine screws (with plain and spring washers)
L	" (with spring washer)
N	" (with plain washer)
F	Feather screws
G	Washer head tapping screws
M	Wood screws

Shape of screw head (second digit)

B	Brazier head
D	Binding head
H	Oval countersunk head
P	Pan head
R	Round head
S	Flat head
T	Truss head
W	Washer head (machine screws)
X	Toothed head


–Type of screw (first digit) –

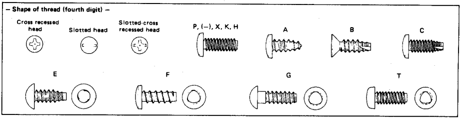

– Shape of screw head (second digit) –
B
D
H
P
R
S
T
W
X
Length

Material (third digit)

S	Steel
E	Stainless steel
C	Cast iron
U	Copper
B	Brass
P	Phosphor bronze
N	Nickel silver
Y	Cast brass
A	Aluminum
Z	Zinc alloy
K	Polycarbonate

Shape of thread (fourth digit)

P	Cross recessed head screws
(–)	Slotted head machine screws
X	Slotted-cross recessed head machine screws
K	Cross recessed head machine screws for precision equipment (type 1)
H	" (type 3)
A	Cross recessed head tapping screws (type 1)
B	" (type 2)
C	" (type 3)
E	Cross recessed head special tapping screws (brand : evertight)
F	" (brand : P-tight)
T	" (brand : taptight)
G	"


– Shape of thread (fourth digit) –
Cross recessed head
Slotted head
Slotted-cross recessed head
P, (–), X, K, H
A
B
C
E
F
G
T

Nominal diameter (fifth and sixth digits)

The fifth and sixth digits are numbers indicating a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

Length (seventh and eighth digits)

The seventh and eighth digits are numbers indicating length in milimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

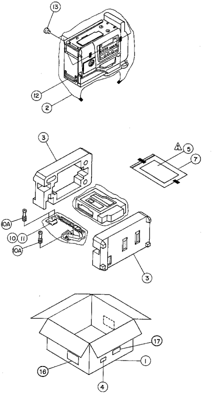
Surface treatment (ninth digit)

Z	Dichromate treatment after galvanizing (MFZn Ⅱ-C)
N	Nickel plating (MFNi Ⅱ, MFNi Ⅰ)
R	Chromium plating (MBCr Ⅱ, MBCr Ⅰ)
G	Silver plating (SP4)
B	Black coating after plating
F	Blackening of iron (FB)
M	Blackening after galvanizing
K	Pickling of brass (PF2)
P	Phosphate treatment
W	Uni-chrome plating
L	Coating with transparent paint
A	Coloring red after galvanizing (MFZn Ⅱ-C)
C	Coloring blue after galvanizing (MFZn Ⅱ-C)
T	Coloring green after galvanizing (MFZn Ⅱ-C)
V	Coloring purple after galvanizing (MFZn Ⅱ-C)

5.2 EXPLODED VIEWS AND PARTS LIST

5.2.1 Packing assembly M 1

SW & VR Name	Position
· LIGHT SW	ON
· SELECT SW	COUNTER
· MONITOR LEVEL VR	CENTER
· AUDIO REC LEVEL VR's	CENTER
· V.OUTSEL SW	VTR
· REC TALLY SW	ON
· POWER SW	OFF
· TIME CODE GENERATOR SW's	
VITC SW	OFF
LTC SW	OFF
RUN SW	FREE
· RIGHT SIDE DOOR SW's	
MONITOR OUT SW	MIX
AUD OUT SW	Hi-Fi
AUD INPUT SELECT SW	
·1/L (LEFT)	CAM
·1/L (RIGHT)	+4
·2/L (LEFT)	CAM
·2/L (RIGHT)	+4
AEF SW	NORM
AUTO REVIEW SW	ON
S-VHS SW	AUTO
VIDEO OUT SW	NORMAL
REC LEVEL SW	MANU
Hi-Fi REC SW	ON
DOLBY NR SW	ON
TRACKING VR	CENTER



– Packing assembly list –

****

PACKING ASSEMBLY <M1>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PRD20430-02	PACKING CASE
2	PRD30077-02	POLY BAG
3	PRD20431A-01	CUSHION ASSY
4	PUP40619	SERIAL NO.STICKER, X2
⚠ 5	PGD30002-438-01	INSTRUCTIONS
7	QPGB024-03404	POLY BAG
10	PGS30196A-01	HANDLE ASSY
10A	SC43390-001	SCREW, X4
11	QPGA020-04505	POLY BAG
12	PGZ01280	DUST CAP
13	PGZ00782	CAP(A), X2
16	PRD30913-08	LABEL, X2
17	PRD43892-05	LABEL(PACKING), X2

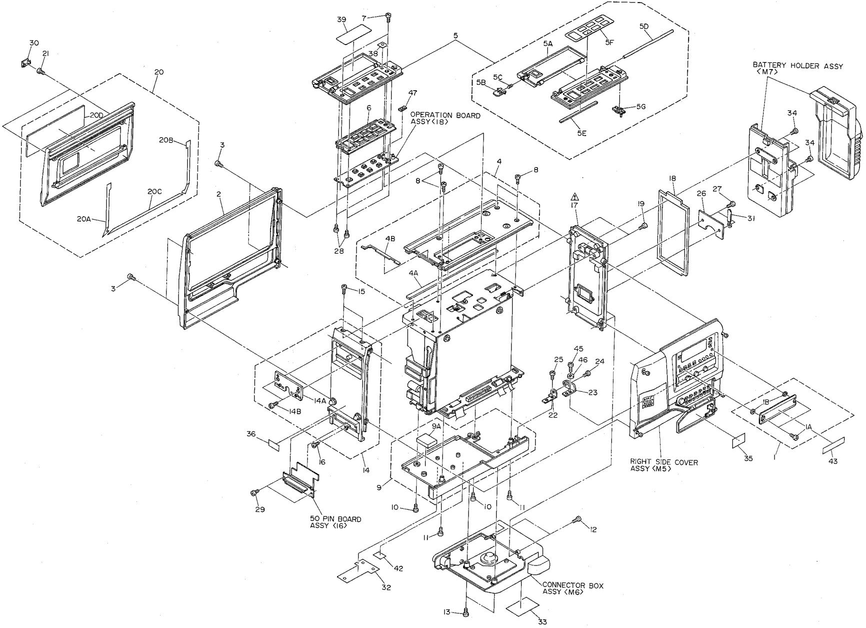
5.2.2 Cabinet assembly M2

— Cabinet assembly list —

****

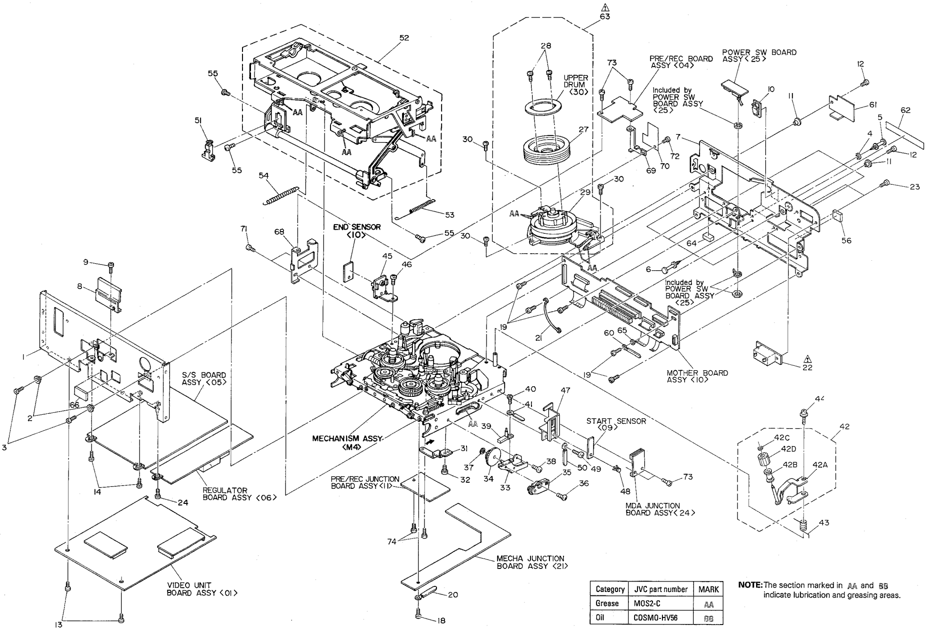
CABINET ASSEMBLY <M2>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PRD44029A-01	COVER(T/C)ASSY
1A	PRD43457-03	SPECIAL SCREW, X2
1B	PRD44236	"E" RING, X2
2	PRD10303-01-04	SIDE COVER(L)
3	SC43397-010	SPECIAL SCREW, X4
4	PRD30964A-01	TOP COVER ASSY
4A	PRD30030-102	PAD
4B	PRD44081	PAD
5	PRD30897A-06	HOLDER ASSY
5A	PRD44012-01-02	DOOR
5B	PRD43840-01-04	KNOB(DOOR)
5C	PRD30023-53	COMPRESSION SPRING
5D	PRD43829-02	SHAFT
5E	PRD30030-99	PAD
5F	PRD43848-01-01	SHEET(OPE)
5G	PRD43827	INDICATOR
6	PRD30869-01-01	BUTTON(OPE)
7	SDSP2006M	SCREW, X2
8	SDSP3008M	SCREW, X4
9	PRD30977A-02	BOTTOM COVER ASSY
9A	PRD30030-108	PAD
10	SDSP3008M	SCREW, X2
11	SDSP3014M	SCREW, X2
12	SDSP3008M	SCREW, X2
13	SDSP3014M	SCREW, X2
14	PRD20434A-05	FRONT COVER ASSY
14A	SC30988-003	CAMERA GUIDE
14B	SDSP3008M	SCREW, X2
15	SDSP4008M	SCREW, X2
16	SDSP3008M	SCREW
⚠ 17	PRD30931-01-06	REAR PANEL
18	PRD43915-01-01	PAD
19	SDSP3008M	SCREW, X2
20	PRD20465D-06	CASSETTE PANEL ASSY
20A	PRD43849-01-02	SHEET(A)
20B	PRD43849-02-02	SHEET(A)
20C	PRD43850	SHEET(B)
20D	PRD30896-04	WINDOW
21	SDSP2606M	SCREW, X2
22	PRD44191	BRACKET(HINGE)
23	PRD44192	ARM
24	PRD44099	SPECIAL SCREW
25	LPSP2606Z	SCREW
26	PRD44055	INSULATOR
27	SDSP2006Z	SCREW, X2
28	SDSF2004Z	SCREW, X4
29	LPSP2006Z	SCREW, X2
30	PRD44259	CAP ,X2
31	PU49485-4	WIRE CLAMP
32	PRD30957	PLATE
33	PRD30087-08	SERIAL NO.PLATE
34	SDSP3008M	SCREW, X4
35	PRD44027	LABEL
36	PRD42985-02	LABEL
38	PRD44120	LABEL(OPE)
39	PRD44118	CAUTION LABEL
42	PRD43307	STICKER
43	PRD44158-02	LABEL(DISPLAY)
45	YQM30032-49	SCREW
46	WLS2600N	L.WASHER
47	PRD44280	PLATE(KNOB)



OPERATION BOARD ASSY〈18〉
5A
5D
5F
5C
5B
5G
5E
BATTERY HOLDER ASSY 〈M7〉
4B
4A
50 PIN BOARD ASSY 〈16〉
9A
1B
1A
RIGHT SIDE COVER ASSY 〈M5〉
CONNECTOR BOX ASSY 〈M6〉

5.2.3 Chassis assembly M3


63
52
28
UPPER DRUM <30>
27
29
30
73
PRE/REC BOARD ASSY <04>
POWER SW BOARD ASSY <25>
Included by POWER SW BOARD ASSY <25>
10
11
12
61
62
5
4
7
72
69
70
23
56
64
6
55
51
54
53
AA
END SENSOR <10>
45
46
71
68
9
8
1
2
3
66
S/S BOARD ASSY <05>
REGULATOR BOARD ASSY <06>
14
24
VIDEO UNIT BOARD ASSY <01>
13
MECHANISM ASSY <M4>
19
21
60
65
MOTHER BOARD ASSY <10>
22
40
41
47
39
START SENSOR <09>
31
37
34
33
38
35
36
32
50
49
48
73
MDA JUNCTION BOARD ASSY <24>
PRE/REC JUNCTION BOARD ASSY <11>
74
MECHA JUNCTION BOARD ASSY <21>
20
18
44
42
42C
42D
42B
42A
43

Category	JVC part number	MARK
Grease	MOS2-C	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

— Chassis assembly list —

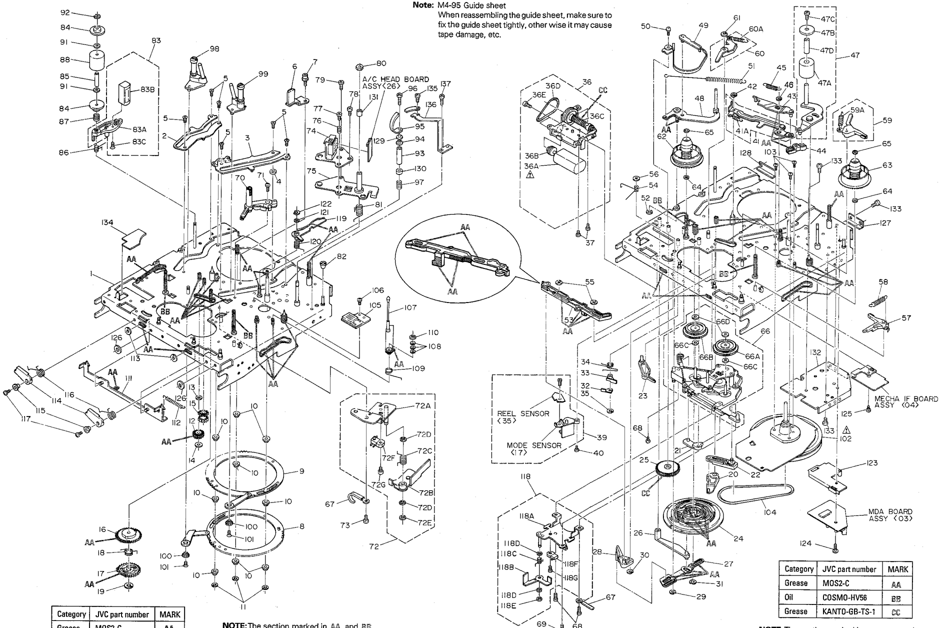
****

CHASSIS ASSEMBLY <M3>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PRD30868-01-02	FRAME(TOP)
2	PRD43914-01-01	SPACER, X2
3	PRD30093	SPECIAL SCREW, X2
4	PRD30084	WASHER, X3
5	PU60010-5	SPACER, X3
6	PU60010-3	SPACER, X4
7	PRD30865-01-04	FRAME(BOTTOM)
8	YQ41954-1-2	BRACKET(GUIDE)
9	SDST2605Z	SCREW
10	PGZ01086	FLAT CABLE CLIP
11	PRD43914-01-01	SPACER, X2
12	PRD30093	SPECIAL SCREW, X2
13	PRD44050-02	SCREW, X2
14	PRD44050-02	SCREW, X2
18	SDSP2606Z	SCREW
19	SDST2605Z	SCREW, X5
20	PU49485-3	WIRE CLAMP
21	PRD44017	STRING
⚠ 22	PGZ01849	BREAKER
23	SPSP3006Z	SCREW, X2
24	PRD44050-02	SCREW
27	PRD20443D	UPPER DRUM ASSY
28	PDM4165A	DRUM SCREW ASSY, X2
29	PRD20444B	LOWER DRUM MOTOR ASSY
30	SDSP2606Z	SCREW, X3
31	YU40548-1-1	BRUSH
32	SDST2005Z	SCREW
33	YQ40636A-3	DAMPER BRACKET ASSY
34	YQ40298	DAMPER GEAR
35	PU56781	DAMPER
36	SDSP2006Z	SCREW
37	PQM30017-23	SLIT WASHER
38	SDST2606Z	SCREW
39	YU40148-1-1	CASSETTE SWITCH
40	SDSP2605Z	SCREW
41	PU49485-3	WIRE CLAMP
42	PRD43820A	CLEANER ARM ASSY
42A	PRD43821A	CLEANER ARM SUB ASSY
42B	PQ45689	ROLLER
42C	PQM30017-38	SLIT WASHER
42D	PQ44837	CLEANER
43	PRD43718	TORSION SPRING
44	DPSP2005Z	SCREW
45	YQ30216-1-3	END SENSOR BRACKET
46	SDST2605Z	SCREW
47	PRD30845	START SENSOR BRACKET
48	PU56800	NYLON RIVET
49	SDST2606Z	SCREW
50	PU49485-3	WIRE CLAMP
51	PU56571	LEAF SWITCH,REC SAFETY
52	PRD20469A	CASSETTE HOUSING ASSY
53	YQM30001-27	TENSION SPRING
54	PRD30024-66	TENSION SPRING
55	SDST2606Z	SCREW, X3
56	PRD30030-28	PAD
60	PU49485-3	WIRE CLAMP
61	PRD44138-01-01	INSULATOR
62	PRD44046-02	LABEL
⚠ 63	PDV2308A	DRUM ASSY
64	PRD44188	PAD
65	PQM30017-6	SLIT WASHER
66	PRD30030-107	PAD
68	PRD44216	BRACKET(A)
69	PRD44217	BRACKET(B)
70	PRS40035-01-01	SHIELD PLATE
71	SDST2606Z	SCREW, X2
72	LPSP2606Z	SCREW
73	SDST2605Z	SCREW, X4
74	SDSP2606Z	SCREW, X2

5.2.4 Mechanism assembly M 4

Note: M4-95 Guide sheet
When reassembling the guide sheet, make sure to fix the guide sheet tightly, other wise it may cause tape damage, etc.



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A/C HEAD BOARD ASSY<26>
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MECHA IF BOARD ASSY <04>
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REEL SENSOR <35>
MODE SENSOR <17>
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MDA BOARD ASSY <03>
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Category	JVC part number	MARK
Grease	MOS2-C	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

Category	JVC part number	MARK
Grease	MOS2-C	AA
Oil	COSMO-HV56	BB
Grease	KANTO-GB-TS-1	CC

NOTE: The section marked in AA , BB and CC indicate lubrication and greasing areas.

— Mechanism assembly list —

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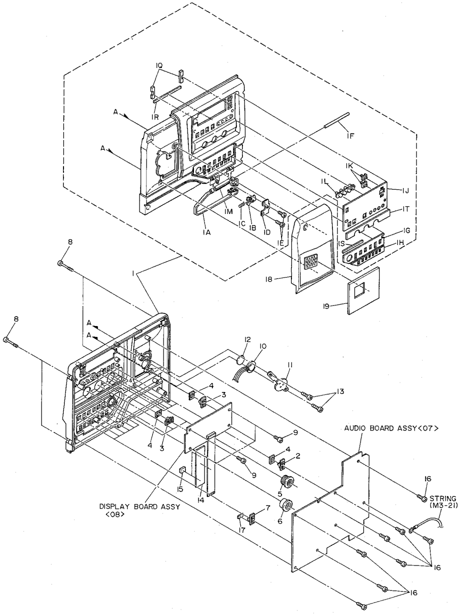
MECHANISM ASSEMBLY <M4>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PRD20418A-06	MAIN DECK ASSY
2	YQ30569	GUIDE RAIL(S)
3	YQ30487	GUIDE RAIL(T)
4	Q03093-827	SPACER
5	PQ41269-2	SPECIAL SCREW, X6
6	PRD30287-01-03	TAPE GUIDE
7	SDSP2605Z	SCREW
8	YQ41229A-1	LOADING RING ASSY (S)
9	YQ41232A-1	LOADING RING ASSY (T)
10	PQ42786	GUIDE ROLLER, X9
11	PQM30017-22	SLIT WASHER, X3
12	PQ40822	CONNECT GEAR 1
13	Q03093-817	SPACER
14	PQM30017-24	SLIT WASHER
15	PQ40823	CONNECT GEAR 2
16	PQ31597	LOADING GEAR 1
17	PQ30337	LOADING GEAR 2
18	PQ41069	TORSION SPRING
19	PQM30017-18	SLIT WASHER
20	PQ42787	CAM LEVER 1
21	PQ40827	CAM LEVER 2
22	PQ42788A	RELAY ARM ASSY
23	PQ40831A-1	CANCEL LEVER ASSY
24	PQ20235-1-3	CONTROL CAM
25	PQ40833	WORM WHEEL
26	PQ40834A	CANCEL LEVER 3 ASSY
27	PQ40836-1-2	SLIDE PLATE
28	PQ40837B	RELAY LEVER ASSY
29	PQM30017-22	SLIT WASHER
30	PQM30017-23	SLIT WASHER
31	REE2500	"E" RING
32	PQ41225-1-2	CAM BRAKE 1
33	PQ41226	CAM BRAKE 2
34	PQ41252-2-2	TORSION SPRING
35	PQM30017-23	SLIT WASHER
36	PGZ01830-02	MOTOR BRACKET ASSY
⚠ 36A	PGZ01939	LOADING MOTOR
36B	PRD44262	MOTOR PULLEY
36C	PGZ01831-02	MOTOR BRACKET UNIT
36D	PRD30022-19	LOADING BELT
36E	SDSP2004M	SCREW, X2
37	SDST2605Z	SCREW, X2
39	PGS30043B	MODE SENSOR ASSY
40	SDSP2605Z	SCREW
41	YQ30489A-1	PINCH ROLLER PLATE ASSY
41A	PQM30001-153	TENSION SPRING
42	PQM30017-23	SLIT WASHER
43	YQ41270A	TOGGLE ARM ASSY
44	PQ40844	TOGGLE ARM 2
45	YQ41237	TENSION SPRING
46	REE2500	"E" RING
47	PQ40874A-2	PINCH ROLLER ARM ASSY
47A	PQ41125A	PINCH ROLLER ASSY
47B	PU53878	PINCH ROLLER CAP
47C	SPSP2005Z	SCREW
47D	PQM30005-39	COLLAR
48	PRD43771A-03	TENSION POLE ASSY
49	PQ40851B	TENSION BAND ASSY
50	SDSP2605Z	SCREW
51	PRD44003	TENSION SPRING
52	REE2000	"E" RING
53	PQ30269-2	CONTROL PLATE
54	PRD44154	TORSION SPRING
55	PQM30017-22	SLIT WASHER, X2
56	PQM30017-23	SLIT WASHER
57	PQ40858B	SEARCH BRAKE ASSY
58	PQM30001-222	TENSION SPRING
59	PQ40860B-3	REW BRAKE ASSY
59A	YQM30001-21-4	TENSION SPRING
60	PRD44028A	FF BRAKE ASSY
60A	PRD30024-61	TENSION SPRING
61	PQM30017-24	SLIT WASHER
62	PGZ01341	REEL DISK (SUPPLY)
63	PGZ01342	REEL DISK (TAKE-UP)
64	Q03093-828	WASHER, X2
65	PQM30017-26	SLIT WASHER, X2
66	PGZ01833	CLUTCH HECHANISM ASSY
66A	PU56650-1-4	TAKE-UP CLUTCH
66B	YU40427	SUPPLY CLUTCH
66C	Q03093-827	SPACER, X2
66D	PQM30017-2	SLIT WASHER, X2
67	PU49485-3	WIRE CLAMP, X2
68	SDST2610Z	SCREW, X3
69	SDSP2608Z	SCREW
70	PUS37229C	CASSETTE LED ASSY
71	SDST2605Z	SCREW
72	PGS30179A	AL SW ASSY
72A	PRD43723A	AL SW BRACKET ASSY
72B	PRD42599A	AL SW LEVER ASSY
72C	PRD42600	TORSION SPRING
72D	Q03093-831	WASHER, X2
72E	REE2000	"E" RING
72F	PGZ00503	INSERT SW
72G	SDSP2006Z	SCREW
73	SDSP2604Z	SCREW
74	PGZ01675	AUDIO/CONTROL HEAD
75	PRD43710A	HEAD ARM ASSY
76	PQM30002-197	COMPRESSION SPRING
77	SDSP2612Z	SCREW
78	PQ44621	SPECIAL SCREW
79	PQ43687B	SPECIAL SCREW
80	NTS4000ZS	NUT
81	PQ44119	TORSION SPRING
82	PQ45181	TAPER NUT
83	PRD43795A-01	FE HEAD ASSY
83A	PRD30860-01-02	FE HEAD ARM
83B	PU60646	FULL ERASE HEAD
83C	SSSK2050M	SCREW
84	PQ42804	LOWER FLANGE, X2
85	PRD44136-01-01	COLLAR
86	PQ42806	TORSION SPRING
87	PQM30002-189	COMPRESSION SPRING
88	PRD44135-01-01	IMPEDANCE ROLLER
91	Q03093-831	WASHER, X2
92	REE1500	"E" RING
93	PRD43733	TAPE GUIDE
94	PRD44270	GUIDE FLANGE
95	PRD44112-01-02	GUIDE SHEET
96	PRD43165	SPECIAL SCREW
97	PRD30023-30	COMPRESSION SPRING
98	YQ40653B	POLE BASE ASSY(SUPPLY)
99	YQ40509D	POLE BASE ASSY(TAKE-UP)
100	PQ40872	SPACER, X2
101	PQ41269	SPECIAL SCREW, X2
⚠ 102	PGZ01728-01-01	CAPSTAN MOTOR
103	SDSP2604Z	SCREW, X3
104	PQM30003-12	REEL BELT
105	PU61315	DEW SENSOR
106	SPSH1725M	SCREW
107	PQ40993B	TU GUIDE ASSY
108	PQM30018-33	WASHER, X3
109	PQ40994-1-2	TORSION SPRING
110	REE2500	"E" RING
111	PQ31604A-8	LOCK PLATE ASSY
112	YQM30001-26-5	SPRING
113	PQM30017-32	SLIT WASHER, X2
114	YQ40833-1-1	CANCEL LEVER, X2
115	PQM30013-10	FLANGE COLLAR, X2
116	PQ42817	TORSION SPRING, X2
117	SDST2608Z	SCREW, X2
118	PGS30181A	LOCK SW ASSY
118A	PRD43725A	LOCK SW BRACKET ASSY
118B	PRD43726A	LOCK SW LEVER ASSY
118C	PRD43717	TORSION SPRING
118D	Q03093-831	WASHER, X2
118E	REE2000	"E" RING
118F	PGZ00503	INSERT SW
118G	SDSP2006Z	SCREW
119	PRD43751A	RELEASE ARM ASSY
120	PRD43757	TORSION SPRING
121	Q03093-825	WASHER
122	REE2500	"E" RING
123	YQ40637-1-1	MDA HOLDER
124	SDST2612Z	SCREW
125	SDST2610Z	SCREW
126	PRD30084-03	WASHER, X2
127	PRD44056-03	INSULATOR
128	PRD44056-04-01	INSULATOR
129	PRD43675	COLLAR
130	PRD44094	GUIDE FLANGE
131	PRD30026-41	COLLAR
132	PRD44143	CORNER BRACKET
133	SDSP2604Z	SCREW, X3
134	PRD43768	COVER
135	SPSH1730M	MINI SCREW
136	PRD44272	BRACKET
137	SDST2605Z	SCREW

5.2.5 Right side cover assembly M5



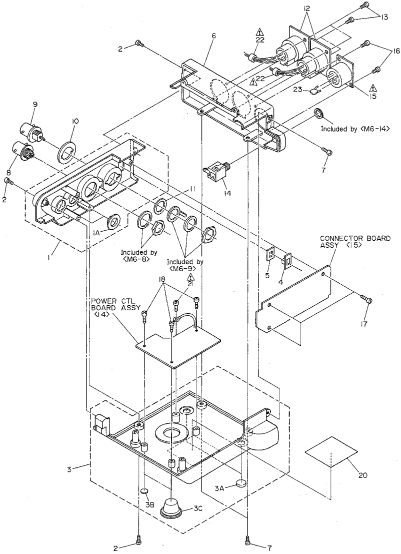
— Right side cover assembly list —

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
		RIGHT SIDE COVER ASSEMBLY <M5>
1	PRD10293C-09	SIDE COVER(R) ASSY
1A	PRD30935-01-01	DOOR
1B	PRD43840-01-04	KNOB(DOOR)
1C	PRD30023-53	COMPRESSION SPRING
1D	PRD43917	PLATE
1E	YQM30054-9	SCREW, X2
1F	PRD43829	SHAFT
1G	PRD43830-01-03	SHEET(DOOR1)
1H	PRD43918-01-02	SHEET(DOOR2)
1J	PRD43832-02-04	SHEET(DISPLAY)
1K	PRD43831-01-02	BUTTON(COUNTER), X2
1L	SC44557	TIME CODE CAP
1M	Q03093-828	WASHER
1Q	PRD44169	SHADE
1R	PRD30030-100	PAD
1S	PRD30030-103	PAD
1T	PRD43834-01-01	SHEET(VR)
2	SC44556-002	KNOB(T/C), X4
3	PRD44020	KNOB(T/C), X2
4	PRD43146-02	KNOB PLATE, X6
5	PRD43839-01-03	KNOB(VR), X3
6	PQ44237-3	KNOB(VR)
7	PRD43835	KNOB(OPE), X6
8	SC43397-010	SPECIAL SCREW, X4
9	SDSP2606Z	SCREW, X4
10	PGZ01282	SPEAKER
11	PRD44119-01-01	SPEAKER BRACKET
12	PRD30030-105	PAD
13	SDSF2606Z	SCREW, X2
14	PRD44067-01-01	INSULATOR
15	PRD42674	PAD, X2
16	YQM30032-49	SCREW, X8
17	PRD42909-04	PLATE, X6
18	PRD10281-01-03	COVER(CHEEK)
19	PRD43838-01-01	PAD(CHEEK)

5.2.6 Connector box assembly M6

— Connector box assembly list —

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
		CONNECTOR BOX ASSEMBLY <M6>	
1	PRD30874A-03	CONNECTOR BOX(L)ASSY	
1A	PRD42906	RCA ESCUTCHEON, X2	
2	SDSP2606M	SCREW, X3	
3	PRD30875A-03	CONNECTOR BOX(B)ASSY	
3A	PRD30090	FOOT, X2	
3B	PRD43134	BLIND SHEET, X2	
3C	PRD43847	CAP(BRAKER)	
4	PRD42830	SLIDE KNOB	
5	PRD43146-03	KNOB PLATE	
6	PRD20422-02-08	CONNECTOR BOX(R)	
7	SDSP2606M	SCREW, X3	
8	PGZ00593	7P CONNECTOR	
9	PGZ00440	BNC CONNECTOR	
10	PU48611	RING	
11	Q03093-439	WASHER	
12	PGZ00438	XLR CONNECTOR, X2	
13	SPSP2606N	SCREW, X4	
14	PGZ01750	PHONE JACK	
⚠ 15	PGZ00594	4P CONNECTOR	
16	SPSP2606N	SCREW, X2	
17	SDSP2606Z	SCREW, X3	
18	SDSP2606Z	SCREW, X3	
20	PRD30030-112	PAD	
⚠ 21	LPSP4008N	SCREW	
⚠ 22	PGZ01268	FERRATE BEADS, X2	
23	QCF11HP-223	CAPACITOR	0.022μF,50V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Included by <M6-8>
Included by <M6-9>
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POWER CTL BOARD ASSY <14>
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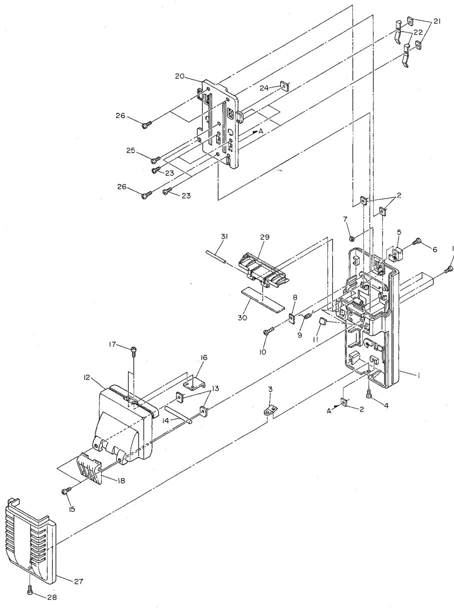
5.2.7 Battery holder assembly M 7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— Battery holder assembly list —

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
********	**********	**************
		BATTERY HOLDER ASSEMBLY <M7>
1	SC10156-001	BATTERY HOLDER BASE
2	PRD30955	PLATE, X3
3	SC45152-001	NUT PLATE
4	SDSP3004N	SCREW
5	SC43570-001	LOCK KNOB
6	SDSP2006M	SCREW
7	NNS2000N	NUT
8	SC43571-001	PLATE
9	PRD44060	SPRING
10	SDSF2005M	SCREW
11	SC45155-001	CUSHION, X2
12	SC20476-001	BATTERY HOLDER COVER(1)
13	PRD30955-02	PLATE, X2
14	PRD44062	SHAFT
15	SSSP2606M	SCREW, X2
16	PRD30955-05	PLATE
17	SPSK2650M	SCREW, X2
18	SC31501-001	SHAFT HOLDER
19	SDSP2605M	SCREW, X4
20	SC20478-001	TERMINAL COVER
21	PRD30955-03	PLATE, X4
22	SC45150-001	TERMINAL PLATE, X4
23	SSSK2040M	SCREW, X4
24	PRD30955-04	PLATE
25	SSSK2040M	SCREW
26	SSSP3005M	SCREW, X3
27	SC20477-001	BATTERY HOLDER COVER(2)
28	SDSP3005M	SCREW
29	SC31319-011	NP-1 GUIDE
30	SC44869-006	CUSHION
31	PRD44066	SHAFT
32	PGJ05027	BATTERY CONNECTOR JIG

SECTION 6
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

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VIDEO BOARD ASSEMBLY <01>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	PRK10147A-01	VIDEO BOARD ASSY
IC1	TC4094BF	IC
IC2	TA7347P	IC
IC3	TC4S81F	IC
IC4	AN608P	IC
IC5	AN608P	IC
IC6	NJM2285M	IC
IC7	TC4S81F	IC
IC8	TC4S81F	IC
IC9	CXL1506M	IC
IC10	NJM2285M	IC
IC11	8VT15	IC
IC12	JCL0007	IC
IC13	NJM2285M	IC
IC15	TA7347P	IC
IC16	VC2076MP-XE	IC
IC17	TC4S71F	IC
IC18	TC4S81F	IC
IC20	M52074FP	IC
IC22	M5278L05M	IC
IC23	BA7233	IC
IC24	AN6308S	IC
IC25	AN6308S	IC
IC26	M52062AFP	IC
IC30	AN3398	IC
Q1	2SB709A(QR)	TRANSISTOR
Q2	DTC144EU	TRANSISTOR
Q3	2SA1576(QRS)	TRANSISTOR
Q4	2SC4081(QRS)	TRANSISTOR
Q5	2SA1576(QRS)	TRANSISTOR
Q6	2SA1576(QRS)	TRANSISTOR
Q7	2SC4081(QRS)	TRANSISTOR
Q8	2SC4081(QRS)	TRANSISTOR
Q9	2SC4081(QRS)	TRANSISTOR
Q10	2SD601A(QR)	TRANSISTOR
Q11	2SD601A(QR)	TRANSISTOR
Q12	2SC4081(QRS)	TRANSISTOR
Q13	2SC4081(QRS)	TRANSISTOR
Q14	2SC4081(QRS)	TRANSISTOR
Q15	2SD601A(QR)	TRANSISTOR
Q16	2SD601A(QR)	TRANSISTOR
Q17	DTC144EU	TRANSISTOR
Q18	2SB643R,S	TRANSISTOR
Q19	DTC144EU	TRANSISTOR
Q20	2SB643R,S	TRANSISTOR
Q21	DTC144EU	TRANSISTOR
Q22	2SB643R,S	TRANSISTOR
Q23	2SA1576(QRS)	TRANSISTOR
Q24	DTC144EU	TRANSISTOR
Q25	DTC144EU	TRANSISTOR
Q26	2SB643R,S	TRANSISTOR
Q27	DTC144EU	TRANSISTOR
Q28	DTC144EU	TRANSISTOR
Q29	2SA1576(QRS)	TRANSISTOR
Q30	2SA1576(QRS)	TRANSISTOR
Q31	2SA1576(QRS)	TRANSISTOR
Q32	2SA1576(QRS)	TRANSISTOR
Q33	2SA1576(QRS)	TRANSISTOR
Q34	2SC4081(QRS)	TRANSISTOR
Q35	2SA1576(QRS)	TRANSISTOR
Q36	2SA1576(QRS)	TRANSISTOR
Q37	2SC4081(QRS)	TRANSISTOR
Q38	2SC4081(QRS)	TRANSISTOR
Q39	2SC4081(QRS)	TRANSISTOR
Q40	2SC4081(QRS)	TRANSISTOR
Q41	2SA1576(QRS)	TRANSISTOR
Q42	2SA1576(QRS)	TRANSISTOR
Q43	2SA1576(QRS)	TRANSISTOR
Q44	2SC4081(QRS)	TRANSISTOR
Q45	2SK621	FE TRANSISTOR
Q46	2SK621	FE TRANSISTOR
Q47	2SK621	FE TRANSISTOR
Q48	2SC4081(QRS)	TRANSISTOR
Q49	2SC4081(QRS)	TRANSISTOR
Q50	2SC4081(QRS)	TRANSISTOR
Q51	2SA1576(QRS)	TRANSISTOR
Q52	2SA1576(QRS)	TRANSISTOR
Q53	2SD601A(QR)	TRANSISTOR
Q54	2SC4081(QRS)	TRANSISTOR
Q55	2SA1576(QRS)	TRANSISTOR
Q56	2SC4081(QRS)	TRANSISTOR
Q57	2SA1576(QRS)	TRANSISTOR
Q58	2SA1576(QRS)	TRANSISTOR
Q59	2SC4081(QRS)	TRANSISTOR
Q60	2SC4081(QRS)	TRANSISTOR
Q61	2SA1576(QRS)	TRANSISTOR
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Q64	2SC4081(QRS)	TRANSISTOR
Q65	2SC4081(QRS)	TRANSISTOR
Q66	2SC4081(QRS)	TRANSISTOR
Q67	2SC4081(QRS)	TRANSISTOR
Q68	2SA1576(QRS)	TRANSISTOR
Q69	2SA1576(QRS)	TRANSISTOR
Q72	2SC4081(QRS)	TRANSISTOR
Q73	2SC4081(QRS)	TRANSISTOR
Q74	2SA1576(QRS)	TRANSISTOR
Q75	DTC144EU	TRANSISTOR
Q76	DTA144EU	TRANSISTOR
Q77	DTC144EU	TRANSISTOR
Q78	DTA144EU	TRANSISTOR
Q79	2SC4081(QRS)	TRANSISTOR
Q80	2SA1576(QRS)	TRANSISTOR
Q81	2SC4081(QRS)	TRANSISTOR
Q82	2SC4081(QRS)	TRANSISTOR

<01>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
Q83	2SK621	FE TRANSISTOR
Q84	2SK621	FE TRANSISTOR
Q85	2SK621	FE TRANSISTOR
Q86	2SC4081(QRS)	TRANSISTOR
Q87	2SC4081(QRS)	TRANSISTOR
Q88	2SC4081(QRS)	TRANSISTOR
Q89	2SC4081(QRS)	TRANSISTOR
Q90	2SA1576(QRS)	TRANSISTOR
Q91	2SA1576(QRS)	TRANSISTOR
Q92	2SC4081(QRS)	TRANSISTOR
Q93	2SC4081(QRS)	TRANSISTOR
Q94	2SA1576(QRS)	TRANSISTOR
Q95	2SC4081(QRS)	TRANSISTOR
Q96	2SC4081(QRS)	TRANSISTOR
Q97	2SC4081(QRS)	TRANSISTOR
Q98	2SA1576(QRS)	TRANSISTOR
Q99	2SC4081(QRS)	TRANSISTOR
Q100	2SC4081(QRS)	TRANSISTOR
Q101	2SA1576(QRS)	TRANSISTOR
Q102	2SA1576(QRS)	TRANSISTOR
Q103	2SC4081(QRS)	TRANSISTOR
Q104	2SA1576(QRS)	TRANSISTOR
Q105	2SA1576(QRS)	TRANSISTOR
Q106	2SC4081(QRS)	TRANSISTOR
Q107	DTC144EU	TRANSISTOR
Q108	2SC4081(QRS)	TRANSISTOR
Q109	DTC144EU	TRANSISTOR
Q110	DTC144EU	TRANSISTOR
Q111	DTC144EU	TRANSISTOR
Q112	DTA144EU	TRANSISTOR
Q113	DTA144EU	TRANSISTOR
Q114	DTC144EU	TRANSISTOR
Q115	2SC4081(QRS)	TRANSISTOR
Q116	2SC4081(QRS)	TRANSISTOR
Q117	DTC144EU	TRANSISTOR
Q118	DTC144EU	TRANSISTOR
Q119	2SA1576(QRS)	TRANSISTOR
Q120	DTC144EU	TRANSISTOR
Q121	2SC4081(QRS)	TRANSISTOR
Q122	DTC144EU	TRANSISTOR
Q123	DTC144EU	TRANSISTOR
Q124	DTC144EU	TRANSISTOR
Q125	DTC144EU	TRANSISTOR
Q126	DTC144TU	TRANSISTOR
Q127	DTC144EU	TRANSISTOR
Q128	DTC144EU	TRANSISTOR
Q129	DTC144EU	TRANSISTOR
Q130	DTA144EU	TRANSISTOR
Q131	DTC144EU	TRANSISTOR
Q132	DTC144EU	TRANSISTOR
Q133	DTC144EU	TRANSISTOR
Q134	2SC4081(QRS)	TRANSISTOR
Q135	2SA1576(QRS)	TRANSISTOR
Q136	2SC4081(QRS)	TRANSISTOR
Q137	DTA144EU	TRANSISTOR
Q138	2SC4081(QRS)	TRANSISTOR
Q139	2SA1576(QRS)	TRANSISTOR
Q140	2SA1576(QRS)	TRANSISTOR
Q141	2SC4081(QRS)	TRANSISTOR
Q142	2SC4081(QRS)	TRANSISTOR
Q143	2SC4081(QRS)	TRANSISTOR
Q144	DTC144EU	TRANSISTOR
Q145	2SA1576(QRS)	TRANSISTOR
Q146	2SA1576(QRS)	TRANSISTOR
Q147	2SC4081(QRS)	TRANSISTOR
Q148	2SA1576(QRS)	TRANSISTOR
Q149	2SC4081(QRS)	TRANSISTOR
Q151	2SC4081(QRS)	TRANSISTOR
Q152	DTC144EU	TRANSISTOR
Q153	DTC144EU	TRANSISTOR
Q154	DTC144EU	TRANSISTOR
Q155	2SA1576(QRS)	TRANSISTOR
Q156	2SC4081(QRS)	TRANSISTOR
Q157	2SC4081(QRS)	TRANSISTOR
Q158	DTC144EU	TRANSISTOR
Q159	2SC4081(QRS)	TRANSISTOR
Q160	2SC4081(QRS)	TRANSISTOR
Q161	2SC4081(QRS)	TRANSISTOR
Q200	2SA1576(QRS)	TRANSISTOR
Q201	2SC4081(QRS)	TRANSISTOR
Q202	2SC4081(QRS)	TRANSISTOR
Q203	2SC4081(QRS)	TRANSISTOR
Q206	DTC144EU	TRANSISTOR
Q207	DTC144EU	TRANSISTOR
Q208	2SC4081(QRS)	TRANSISTOR
Q209	2SA1576(QRS)	TRANSISTOR
Q210	2SC4081(QRS)	TRANSISTOR
Q211	2SC4081(QRS)	TRANSISTOR
Q212	2SC4081(QRS)	TRANSISTOR
Q213	2SC4081(QRS)	TRANSISTOR
Q214	DTC144EU	TRANSISTOR
Q215	2SA1576(QRS)	TRANSISTOR
Q216	2SC4081(QRS)	TRANSISTOR
Q217	2SK621	FE TRANSISTOR
Q218	2SK621	FE TRANSISTOR
Q219	2SK621	FE TRANSISTOR
Q220	2SC4081(QRS)	TRANSISTOR
Q221	2SC4081(QRS)	TRANSISTOR
D1	1SS133	DIODE
D2	1SS133	DIODE
D3	HZM6CTR	ZENER DIODE
D4	1SS133	DIODE
D5	1SS133	DIODE
D6	HZM6CTR	ZENER DIODE
D7	1SS133	DIODE
D8	1SS133	DIODE
D9	DAN202U	DIODE
D10	1SS133	DIODE
D11	1SS133	DIODE

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
D12	1SS133	DIODE	
D13	1SS133	DIODE	
D14	1SS133	DIODE	
D15	1SS133	DIODE	
D16	1SS133	DIODE	
D17	1SS133	DIODE	
D18	1SS133	DIODE	
D19	1SS133	DIODE	
D20	1SS99	DIODE	
D21	1SS99	DIODE	
D22	DAN202U	DIODE	
D23	MA157	DIODE	
D24	DAN202U	DIODE	
D25	DAN202U	DIODE	
D26	DAN202U	DIODE	
D27	DAN202U	DIODE	
D28	DAN202U	DIODE	
D29	DAN202U	DIODE	
D30	DAN202U	DIODE	
D31	DAN202U	DIODE	
D32	MA157	DIODE	
D40	DAN202U	DIODE	
D41	DAN202U	DIODE	
D42	1SS99	DIODE	
D43	1SS99	DIODE	
R1	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R2	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R3	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R4	NRSA63J-181N	RESISTOR	180Ω,1/16W
R5	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R6	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R7	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R8	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R9	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R10	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R11	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R12	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R13	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R14	NRSA63J-181N	RESISTOR	180Ω,1/16W
R15	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R16	NRSA63J-912N	RESISTOR	9.1KΩ,1/16W
R17	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R18	NRSA63J-821N	RESISTOR	820Ω,1/16W
R19	NRSA63J-561N	RESISTOR	560Ω,1/16W
R20	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R21	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R22	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R23	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R24	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R25	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R26	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R27	NRSA63J-680N	RESISTOR	68Ω,1/16W
R28	NRSA63J-680N	RESISTOR	68Ω,1/16W
R29	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R30	QRD167J-750	RESISTOR	75Ω,1/6W
R31	NRSA63J-912N	RESISTOR	9.1KΩ,1/16W
R32	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R33	NRSA63J-821N	RESISTOR	820Ω,1/16W
R34	NRSA63J-561N	RESISTOR	560Ω,1/16W
R35	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R36	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R37	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R38	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R39	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R40	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R41	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R42	NRSA63J-680N	RESISTOR	68Ω,1/16W
R43	NRSA63J-680N	RESISTOR	68Ω,1/16W
R44	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R45	QRD167J-750	RESISTOR	75Ω,1/6W
R46	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R47	NRSA63J-681N	RESISTOR	680Ω,1/16W
R48	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R49	NRSA63J-681N	RESISTOR	680Ω,1/16W
R50	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R51	NRSA63J-681N	RESISTOR	680Ω,1/16W
R52	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R53	NRSA63J-681N	RESISTOR	680Ω,1/16W
R54	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R55	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R56	NRSA63J-681N	RESISTOR	680Ω,1/16W
R57	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R58	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R59	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R60	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R61	NVP1415-102N	V RESISTOR, EE Y LEVEL	1KΩ,1/4W
R62	NRSA63J-391N	RESISTOR	390Ω,1/16W
R63	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R64	NRSA63J-681N	RESISTOR	680Ω,1/16W
R65	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R66	NVP1415-102N	V RESISTOR, EE VIDEO Y LEV	1KΩ,1/4W
R67	NRSA63J-271N	RESISTOR	270Ω,1/16W
R68	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R69	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R70	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R71	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R72	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R73	NRSA63J-181N	RESISTOR	180Ω,1/16W
R74	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R75	NRSA63J-681N	RESISTOR	680Ω,1/16W
R76	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R77	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R78	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R79	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R80	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R81	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R82	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R83	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R84	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R85	NRSA63J-821N	RESISTOR	820Ω,1/16W
R86	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R87	NRSA63J-101N	RESISTOR	100Ω,1/16W

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#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R88	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R89	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R90	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R91	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R92	NRSA63J-471N	RESISTOR	470Ω,1/16W
R93	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R94	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R95	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R96	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R98	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R99	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R100	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R101	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R102	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R103	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R104	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R105	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R106	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R107	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R108	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R109	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R110	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R111	NRSA63J-101N	RESISTOR	100Ω,1/16W
R112	NRSA63J-821N	RESISTOR	820Ω,1/16W
R113	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R114	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R115	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R116	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R117	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R119	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R120	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R121	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R122	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R123	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R124	NRSA63J-101N	RESISTOR	100Ω,1/16W
R125	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R126	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R127	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R128	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R129	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R130	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R131	NRSA63J-101N	RESISTOR	100Ω,1/16W
R132	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R133	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R134	NVP1415-102N	V RESISTOR, EE VIDEO C LEV	1KΩ,1/4W
R135	NVP1415-102N	V RESISTOR, EE C LEVEL	1KΩ,1/4W
R136	NRSA63J-181N	RESISTOR	180Ω,1/16W
R137	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R138	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R139	NRSA63J-561N	RESISTOR	560Ω,1/16W
R140	QRD167J-680	RESISTOR	68Ω,1/6W
R141	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R143	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R144	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R145	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R146	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R148	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R149	NRSA63J-681N	RESISTOR	680Ω,1/16W
R150	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R151	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R152	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R153	NRSA63J-181N	RESISTOR	180Ω,1/16W
R154	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R155	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R156	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R157	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R158	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R160	NRSA63J-681N	RESISTOR	680Ω,1/16W
R161	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R162	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R163	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R164	NRSA63J-181N	RESISTOR	180Ω,1/16W
R165	NRSA63J-121N	RESISTOR	120Ω,1/16W
R166	NRSA63J-823N	RESISTOR	82KΩ,1/16W
R167	NRSA63J-101N	RESISTOR	100Ω,1/16W
R168	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R169	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R170	NRSA63J-331N	RESISTOR	330Ω,1/16W
R171	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R172	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R173	NVP1415-202N	V RESISTOR, UNCORR LEVEL	2KΩ,1/4W
R174	NRSA63J-681N	RESISTOR	680Ω,1/16W
R175	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R176	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R177	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R178	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R179	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R180	NRSA63J-331N	RESISTOR	330Ω,1/16W
R181	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R182	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R183	NRSA63J-183N	RESISTOR	18KΩ,1/16W
R184	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R185	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R186	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R187	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R188	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R189	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R190	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R191	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R192	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R193	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R194	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R195	NRSA63J-561N	RESISTOR	560Ω,1/16W
R196	NVP1415-501N	V RESISTOR, COMB LEVEL	500Ω,1/4W
R197	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R198	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R199	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R200	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R201	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R202	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R203	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R204	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R209	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R210	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R211	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R212	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R213	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R214	NRSA63J-821N	RESISTOR	820Ω,1/16W
R215	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R216	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R217	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R218	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R219	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R220	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R221	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R222	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R223	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R224	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R225	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R226	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R227	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R228	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R229	NRSA63J-101N	RESISTOR	100Ω,1/16W
R230	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R231	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R232	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R233	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R234	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R235	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R236	NRSA63J-471N	RESISTOR	470Ω,1/16W
R237	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R238	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R239	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R240	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R241	NRSA63J-331N	RESISTOR	330Ω,1/16W
R242	NRSA63J-331N	RESISTOR	330Ω,1/16W
R243	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R244	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R245	NRSA63J-470N	RESISTOR	47Ω,1/16W
R246	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R247	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R248	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R249	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R250	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R251	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R253	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R254	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R255	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R256	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R257	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R258	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R259	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R260	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R261	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R262	NRSA63J-101N	RESISTOR	100Ω,1/16W
R263	NRSA63J-561N	RESISTOR	560Ω,1/16W
R265	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R267	NRSA63J-561N	RESISTOR	560Ω,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R268	NRSA63J-561N	RESISTOR	560Ω,1/16W
R269	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R270	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R271	NRSA63J-391N	RESISTOR	390Ω,1/16W
R272	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R273	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R274	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R275	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R276	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R277	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R278	NRSA63J-681N	RESISTOR	680Ω,1/16W
R279	NRSA63J-821N	RESISTOR	820Ω,1/16W
R280	NRSA63J-181N	RESISTOR	180Ω,1/16W
R281	NRSA63J-471N	RESISTOR	470Ω,1/16W
R282	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R283	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R284	NRSA63J-181N	RESISTOR	180Ω,1/16W
R285	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R286	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R287	NRSA63J-271N	RESISTOR	270Ω,1/16W
R288	NRSA63J-121N	RESISTOR	120Ω,1/16W
R290	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R291	NRSA63J-391N	RESISTOR	390Ω,1/16W
R292	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R293	NVP1415-102N	V RESISTOR, SUB EMPHA IN LEV	1KΩ,1/4W
R294	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R295	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R296	NVP1415-502N	V RESISTOR, SUB EMPHA OUT LEV	5KΩ,1/4W
R297	NRVA63D-223N	RESISTOR	22KΩ,1/16W
R299	NRVA63D-332N	RESISTOR	3.3KΩ,1/16W
R301	NRVA63D-332N	RESISTOR	3.3KΩ,1/16W
R302	NRVA63D-152N	RESISTOR	1.5KΩ,1/16W
R303	NRVA63D-471N	RESISTOR	470Ω,1/16W
R304	NRVA63D-102N	RESISTOR	1KΩ,1/16W
R308	NRVA63D-102N	RESISTOR	1KΩ,1/16W
R309	NRSA63J-821N	RESISTOR	820Ω,1/16W
R310	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R311	NRSA63J-471N	RESISTOR	470Ω,1/16W
R312	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R313	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R314	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R315	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R316	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R317	NRSA63J-681N	RESISTOR	680Ω,1/16W
R318	NRSA63J-181N	RESISTOR	180Ω,1/16W
R319	NRSA63J-242N	RESISTOR	2.4KΩ,1/16W
R320	NRSA63J-181N	RESISTOR	180Ω,1/16W
R321	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R324	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R325	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R326	NRSA63J-471N	RESISTOR	470Ω,1/16W
R327	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R328	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R329	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R330	NRSA63J-102N	RESISTOR	1KΩ,1/16W

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#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R331	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R332	NRSA63J-181N	RESISTOR	180Ω,1/16W
R333	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R335	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R336	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R337	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R338	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R339	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R340	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R341	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R342	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R343	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R344	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R345	NRSA63J-680N	RESISTOR	68Ω,1/16W
R346	NRSA63J-560N	RESISTOR	56Ω,1/16W
R347	NVP1415-503N	V RESISTOR, VHS CARRI	50KΩ,1/4W
R348	NVP1415-203N	V RESISTOR, VHS DEVI	20KΩ,1/4W
R349	NVP1415-503N	V RESISTOR, S-VHS CARRI	50KΩ,1/4W
R350	NVP1415-203N	V RESISTOR, S-VHS DEVI	20KΩ,1/4W
R351	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R352	NRVA63D-681N	RESISTOR	680Ω,1/16W
R353	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R354	NRSA63J-125N	RESISTOR	1.2MΩ,1/16W
R355	NRSA63J-561N	RESISTOR	560Ω,1/16W
R356	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R357	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R358	NVP1415-103N	V RESISTOR, S-VHS W.CLIP	10KΩ,1/4W
R359	NVP1415-103N	V RESISTOR, VHS W.CLIP	10KΩ,1/4W
R360	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R361	NVP1415-103N	V RESISTOR, VHS D.CLIP	10KΩ,1/4W
R362	NVP1415-103N	V RESISTOR, S-VHS D.CLIP	10KΩ,1/4W
R363	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R364	NRSA63J-471N	RESISTOR	470Ω,1/16W
R365	NRSA63J-471N	RESISTOR	470Ω,1/16W
R366	NRSA63J-181N	RESISTOR	180Ω,1/16W
R367	NRSA63J-821N	RESISTOR	820Ω,1/16W
R368	NRSA63J-151N	RESISTOR	150Ω,1/16W
R369	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R370	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R371	NVP1415-203N	V RESISTOR, AGC LEV	20KΩ,1/4W
R372	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R373	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R374	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R375	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R376	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R377	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R378	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R379	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R380	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R381	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R382	NRSA63J-821N	RESISTOR	820Ω,1/16W
R383	NRSA63J-225N	RESISTOR	2.2MΩ,1/16W
R384	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R385	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R386	NRSA63J-331N	RESISTOR	330Ω,1/16W
R387	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R388	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R389	NVP1415-203N	V RESISTOR, VHS PB Y LEV	20KΩ,1/4W
R390	NVP1415-103N	V RESISTOR, S-VHS PB Y LEV	10KΩ,1/4W
R392	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R393	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R394	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R395	NRSA63J-561N	RESISTOR	560Ω,1/16W
R396	NRSA63J-561N	RESISTOR	560Ω,1/16W
R399	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R400	NVP1415-202N	V RESISTOR, VIDEO PB C LEV	2KΩ,1/4W
R401	NRSA63J-821N	RESISTOR	820Ω,1/16W
R402	NRSA63J-181N	RESISTOR	180Ω,1/16W
R403	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R404	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R405	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R406	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R407	NRSA63J-181N	RESISTOR	180Ω,1/16W
R408	NRSA63J-101N	RESISTOR	100Ω,1/16W
R409	NVP1415-202N	V RESISTOR, Y/C PB C LEV	2KΩ,1/4W
R410	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R411	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R412	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R413	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R414	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R415	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R416	NVP1415-103N	V RESISTOR, C LEVEL & PHASE	10KΩ,1/4W
R417	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R418	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R419	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R420	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R421	NRSA63J-391N	RESISTOR	390Ω,1/16W
R422	NRSA63J-101N	RESISTOR	100Ω,1/16W
R423	NRSA63J-391N	RESISTOR	390Ω,1/16W
R424	NVP1415-202N	V RESISTOR, CNR DELAY LEVEL	2KΩ,1/4W
R425	NVP1415-501N	V RESISTOR, CNR FEED BACK GAIN	500Ω,1/4W
R426	NVP1415-202N	V RESISTOR, CNR INPUT LEVEL	2KΩ,1/4W
R427	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R428	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R429	NRSA63J-681N	RESISTOR	680Ω,1/16W
R430	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R431	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R432	NRSA63J-561N	RESISTOR	560Ω,1/16W
R433	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R434	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R435	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R436	NVP1415-202N	V RESISTOR, VHS PB Y/C DELAY	2KΩ,1/4W
R437	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R438	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R439	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R440	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R441	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R442	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R443	NVP1415-202N	V RESISTOR, S-VHS PB Y/C DELAY	2KΩ,1/4W
R444	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R445	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R446	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R447	NRSA63J-223N	RESISTOR	22KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R448	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R450	NRSA63J-331N	RESISTOR	330Ω,1/16W
R451	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R452	NRSA63J-681N	RESISTOR	680Ω,1/16W
R453	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R454	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R455	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R456	NRSA63J-101N	RESISTOR	100Ω,1/16W
R457	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R458	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R459	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R460	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R461	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R462	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R463	NRSA63J-471N	RESISTOR	470Ω,1/16W
R464	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R465	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R466	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R467	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R468	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R469	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R470	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R471	NRSA63J-681N	RESISTOR	680Ω,1/16W
R472	NRSA63J-821N	RESISTOR	820Ω,1/16W
R473	NRSA63J-181N	RESISTOR	180Ω,1/16W
R474	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R475	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R476	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R477	NRSA63J-121N	RESISTOR	120Ω,1/16W
R478	NRSA63J-120N	RESISTOR	12Ω,1/16W
R479	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R481	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R482	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R483	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R484	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R485	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R486	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R487	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R488	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R489	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R490	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R491	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R492	NVP1415-204N	V RESISTOR, PILOT BURST LEV	200KΩ,1/4W
R493	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R494	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R495	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R496	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R497	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R498	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R499	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R500	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R501	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R502	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R503	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R504	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R505	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R507	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R509	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R600	NVP1415-503N	V RESISTOR, S-DET ADJ	50KΩ,1/4W
R602	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R603	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R604	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R605	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R606	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R607	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R608	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R609	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R610	NVP1415-102N	V RESISTOR, 1H DELAY LEV	1KΩ,1/4W
R611	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R612	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R613	NRSA63J-181N	RESISTOR	180Ω,1/16W
R614	NRSA63J-181N	RESISTOR	180Ω,1/16W
R615	NRSA63J-151N	RESISTOR	150Ω,1/16W
R616	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R617	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R618	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R619	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R621	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R622	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R623	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R624	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R625	NRSA63J-331N	RESISTOR	330Ω,1/16W
R626	NRSA63J-821N	RESISTOR	820Ω,1/16W
R627	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R628	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R629	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R630	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R631	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R632	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R633	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R634	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R635	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R636	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R637	NRSA63J-391N	RESISTOR	390Ω,1/16W
R638	NRSA63J-821N	RESISTOR	820Ω,1/16W
R639	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R640	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R641	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R642	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R643	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R644	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R649	NRSA63J-684N	RESISTOR	680KΩ,1/16W
R652	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R653	NRSA63J-820N	RESISTOR	82Ω,1/16W
R654	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R655	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R656	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R657	NRSA63J-181N	RESISTOR	180Ω,1/16W
R661	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R662	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W

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#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R663	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R664	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R665	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R666	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R667	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R668	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R669	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R670	NRSA63J-560N	RESISTOR	56Ω,1/16W
R671	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R672	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R673	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R674	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R675	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R676	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R677	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R678	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R679	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R680	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R681	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R682	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R683	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R684	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R685	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R686	NRSA63J-561N	RESISTOR	560Ω,1/16W
R687	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R688	NRSA63J-101N	RESISTOR	100Ω,1/16W
R689	NRSA63J-331N	RESISTOR	330Ω,1/16W
C1	NCS31HJ-100A	CAPACITOR	10PF,50V
C2	NCS31HJ-100A	CAPACITOR	10PF,50V
C3	NCB31EK-103A	CAPACITOR	0.01μF,25V
C4	NEH11EM-336NP	E CAPACITOR	33μF,25V
C5	NEH11CM-476NP	E CAPACITOR	47μF,16V
C6	NEH11CM-106N	E CAPACITOR	10μF,16V
C7	NEH11CM-106N	E CAPACITOR	10μF,16V
C8	NEH11CM-106N	E CAPACITOR	10μF,16V
C9	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C10	NCB31EK-103A	CAPACITOR	0.01μF,25V
C11	NEH11CM-476NP	E CAPACITOR	47μF,16V
C12	NCB31EK-103A	CAPACITOR	0.01μF,25V
C13	NEH11EM-336NP	E CAPACITOR	33μF,25V
C14	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C15	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C16	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C17	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C18	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C19	NCB31EK-103A	CAPACITOR	0.01μF,25V
C20	NCB31EK-103A	CAPACITOR	0.01μF,25V
C21	NCB31EK-103A	CAPACITOR	0.01μF,25V
C22	NEH11EM-336NP	E CAPACITOR	33μF,25V
C23	NCB31EK-103A	CAPACITOR	0.01μF,25V
C24	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C25	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C26	NEH11CM-476NP	E CAPACITOR	47μF,16V
C27	NEH11CM-106N	E CAPACITOR	10μF,16V
C28	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C29	NCB31EK-103A	CAPACITOR	0.01μF,25V
C30	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C31	NEH11CM-106N	E CAPACITOR	10μF,16V
C32	NEH11EM-336NP	E CAPACITOR	33μF,25V
C33	NCB31EK-103A	CAPACITOR	0.01μF,25V
C34	NEH11CM-476NP	E CAPACITOR	47μF,16V
C35	NCT08CH-390A	CAPACITOR	39PF
C36	NEH11CM-106N	E CAPACITOR	10μF,16V
C37	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C38	NCS31HJ-150A	CAPACITOR	15PF,50V
C39	NEH10JM-106N	E CAPACITOR	10μF,6.3V
C40	NEH11CM-106N	E CAPACITOR	10μF,16V
C41	NCT08CH-680A	CAPACITOR	68PF
C42	NCS31HJ-390A	CAPACITOR	39PF,50V
C43	NCS31HJ-121A	CAPACITOR	120PF,50V
C44	NCB31EK-103A	CAPACITOR	0.01μF,25V
C46	NCB31EK-103A	CAPACITOR	0.01μF,25V
C47	NEH11EM-336NP	E CAPACITOR	33μF,25V
C48	NCT08CH-560A	CAPACITOR	56PF
C49	NCB31EK-103A	CAPACITOR	0.01μF,25V
C50	QFN31HJ-103	M CAPACITOR	0.01μF,50V
C51	NEH11EM-336NP	E CAPACITOR	33μF,25V
C52	NCB31EK-103A	CAPACITOR	0.01μF,25V
C53	NEH11CM-106N	E CAPACITOR	10μF,16V
C55	NEH11CM-106N	E CAPACITOR	10μF,16V
C56	NCS31HJ-100A	CAPACITOR	10PF,50V
C57	NEH11CM-106N	E CAPACITOR	10μF,16V
C59	NEH11CM-106N	E CAPACITOR	10μF,16V
C60	NCS31HJ-100A	CAPACITOR	10PF,50V
C61	NEH11EM-336NP	E CAPACITOR	33μF,25V
C62	NCB31EK-103A	CAPACITOR	0.01μF,25V
C63	NEH11HM-105NZ	E CAPACITOR	1μF,50V
C64	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C65	NCB31HK-102A	CAPACITOR	0.001μF,50V
C66	NEH11HM-224NZ	E CAPACITOR	0.22μF,50V
C67	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C68	NCB31HK-102A	CAPACITOR	0.001μF,50V
C69	NEN11HM-224NZ	E CAPACITOR	0.22μF,50V
C70	NCB31HK-102A	CAPACITOR	0.001μF,50V
C71	NCB31HK-102A	CAPACITOR	0.001μF,50V
C72	NEH11HM-105NZ	E CAPACITOR	1μF,50V
C73	NCS31HJ-101A	CAPACITOR	100PF,50V
C74	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C75	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C76	NEH11EM-336NP	E CAPACITOR	33μF,25V
C77	NCB31EK-103A	CAPACITOR	0.01μF,25V
C78	NEH11EM-336NP	E CAPACITOR	33μF,25V
C79	NEH11EM-336NP	E CAPACITOR	33μF,25V
C80	NCS31HJ-4R0A	CAPACITOR	4PF,50V
C81	NCB31EK-103A	CAPACITOR	0.01μF,25V
C82	NEH11EM-336NP	E CAPACITOR	33μF,25V
C83	NEH11CM-226NP	E CAPACITOR	22μF,16V
C84	NEN10JM-226NP	E CAPACITOR	22μF,6.3V
C85	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C86	NEH10JM-106N	E CAPACITOR	10μF,6.3V
C87	NCB31EK-103A	CAPACITOR	0.01μF,25V
C88	NEH11EM-336NP	E CAPACITOR	33μF,25V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C89	NEH11CM-106N	E CAPACITOR	10μF,16V
C91	NEN11EM-475NZ	NP E CAPACITOR	4.7μF,25V
C92	NEN11EM-475NZ	NP E CAPACITOR	4.7μF,25V
C93	NEH11CM-106N	E CAPACITOR	10μF,16V
C94	NEH11CM-106N	E CAPACITOR	10μF,16V
C95	NCT08CH-221A	CAPACITOR	220PF
C96	NCS31HJ-561A	CAPACITOR	560PF,50V
C98	NEH11CM-106N	E CAPACITOR	10μF,16V
C99	NCB31EK-103A	CAPACITOR	0.01μF,25V
C100	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C101	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C102	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C103	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C104	NEH11CM-106N	E CAPACITOR	10μF,16V
C105	NCT08CH-470A	CAPACITOR	47PF
C107	NCS31HJ-101A	CAPACITOR	100PF,50V
C108	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C109	NEH11CM-106N	E CAPACITOR	10μF,16V
C110	NEH11CM-106N	E CAPACITOR	10μF,16V
C111	NEH11CM-106N	E CAPACITOR	10μF,16V
C112	NEH11CM-106N	E CAPACITOR	10μF,16V
C115	NCB31EK-103A	CAPACITOR	0.01μF,25V
C116	NEH11CM-106N	E CAPACITOR	10μF,16V
C117	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C118	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C119	NEH11CM-476NP	E CAPACITOR	47μF,16V
C120	NEH11CM-106N	E CAPACITOR	10μF,16V
C121	NCB31EK-103A	CAPACITOR	0.01μF,25V
C122	NEH11EM-336NP	E CAPACITOR	33μF,25V
C123	NCT08CH-301A	CAPACITOR	300PF
C124	NCT08CH-301A	CAPACITOR	300PF
C125	NCT08CH-221A	CAPACITOR	220PF
C126	NCT08CH-820A	CAPACITOR	82PF
C127	NCT08CH-271A	CAPACITOR	270PF
C128	NCT08CH-470A	CAPACITOR	47PF
C129	NCT08CH-181A	CAPACITOR	180PF
C130	NCT08CH-271A	CAPACITOR	270PF
C131	NCT08CH-271A	CAPACITOR	270PF
C132	NCB31EK-103A	CAPACITOR	0.01μF,25V
C133	NCT08CH-680A	CAPACITOR	68PF
C135	NCS31HJ-151A	CAPACITOR	150PF,50V
C136	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C137	NEH11EM-336NP	E CAPACITOR	33μF,25V
C138	NCB31EK-103A	CAPACITOR	0.01μF,25V
C139	NCB31EK-103A	CAPACITOR	0.01μF,25V
C140	NEH11CM-476NP	E CAPACITOR	47μF,16V
C141	NEH11CM-106N	E CAPACITOR	10μF,16V
C142	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C143	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C144	NEH11EM-336NP	E CAPACITOR	33μF,25V
C145	NCB31EK-103A	CAPACITOR	0.01μF,25V
C146	QEF80JM-106	TANTAL CAPACITOR	10μF,6.3V
C147	NCB31EK-103A	CAPACITOR	0.01μF,25V
C148	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C149	NCS31HJ-390A	CAPACITOR	39PF,50V
C150	NCB31EK-103A	CAPACITOR	0.01μF,25V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C151	NCB31EK-103A	CAPACITOR	0.01μF,25V
C152	NCS31HJ-120A	CAPACITOR	12PF,50V
C153	NCB31EK-103A	CAPACITOR	0.01μF,25V
C154	NEH11HM-224NZ	E CAPACITOR	0.22μF,50V
C155	NCB31EK-103A	CAPACITOR	0.01μF,25V
C156	NCT08CH-271A	CAPACITOR	270PF
C157	NCT08CH-101A	CAPACITOR	100PF
C158	NCS31HJ-390A	CAPACITOR	39PF,50V
C159	NEH11HM-474NZ	E CAPACITOR	0.47μF,50V
C160	NEN11EM-475NZ	NP E CAPACITOR	4.7μF,25V
C161	NEH11CM-106N	E CAPACITOR	10μF,16V
C162	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C163	NEH11HM-105NZ	E CAPACITOR	1μF,50V
C164	NEH11HM-474NZ	E CAPACITOR	0.47μF,50V
C165	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C166	NCB31EK-103A	CAPACITOR	0.01μF,25V
C167	NEH11CM-106N	E CAPACITOR	10μF,16V
C168	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C169	NEH11CM-476NP	E CAPACITOR	47μF,16V
C170	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C171	NCB31EK-103A	CAPACITOR	0.01μF,25V
C172	QEF80JM-106	TANTAL CAPACITOR	10μF,6.3V
C174	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C175	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C176	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C177	NEH11HM-474NZ	E CAPACITOR	0.47μF,50V
C178	NCS31HJ-221A	CAPACITOR	220PF,50V
C179	NCS31HJ-680A	CAPACITOR	68PF,50V
C180	NCB31EK-103A	CAPACITOR	0.01μF,25V
C181	NCS31HJ-470A	CAPACITOR	47PF,50V
C182	NCB31EK-103A	CAPACITOR	0.01μF,25V
C185	NCT08CH-331A	CAPACITOR	330PF
C186	NCT08CH-121A	CAPACITOR	120PF
C187	NCT08CH-331A	CAPACITOR	330PF
C188	NCT08CH-180A	CAPACITOR	18PF
C189	NCB31EK-103A	CAPACITOR	0.01μF,25V
C190	NCB31EK-103A	CAPACITOR	0.01μF,25V
C191	NCB31EK-103A	CAPACITOR	0.01μF,25V
C192	NEH11EM-336NP	E CAPACITOR	33μF,25V
C193	NEH11CM-106N	E CAPACITOR	10μF,16V
C194	NCB31EK-103A	CAPACITOR	0.01μF,25V
C195	QEF81AM-336	TANTAL CAPACITOR	33μF,10V
C196	NCB31EK-103A	CAPACITOR	0.01μF,25V
C197	NCB31EK-103A	CAPACITOR	0.01μF,25V
C198	QAT3001-017	TRIMMER, C LEVEL & PHASE	
C199	NCB31EK-103A	CAPACITOR	0.01μF,25V
C200	NCS31HJ-121A	CAPACITOR	120PF,50V
C201	NCB31EK-103A	CAPACITOR	0.01μF,25V
C202	NCB31EK-103A	CAPACITOR	0.01μF,25V
C203	NCB31EK-103A	CAPACITOR	0.01μF,25V
C204	NCB31EK-103A	CAPACITOR	0.01μF,25V
C205	NCT08CH-101A	CAPACITOR	100PF
C206	NCB31EK-103A	CAPACITOR	0.01μF,25V
C207	NCB31EK-103A	CAPACITOR	0.01μF,25V
C208	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C209	NEH11HM-105NZ	E CAPACITOR	1μF,50V
C210	NCB31EK-103A	CAPACITOR	0.01μF,25V

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#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C211	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C212	NCB31EK-103A	CAPACITOR	0.01μF,25V
C213	NEH11EM-336NP	E CAPACITOR	33μF,25V
C214	NCB31EK-103A	CAPACITOR	0.01μF,25V
C215	NCB31EK-103A	CAPACITOR	0.01μF,25V
C216	NCB31EK-103A	CAPACITOR	0.01μF,25V
C217	NCB31EK-103A	CAPACITOR	0.01μF,25V
C218	NCS31HJ-151A	CAPACITOR	150PF,50V
C219	NCS31HJ-151A	CAPACITOR	150PF,50V
C220	NCB31HK-103A	CAPACITOR	0.01μF,50V
C221	NCS31HJ-221A	CAPACITOR	220PF,50V
C222	NCS31HJ-151A	CAPACITOR	150PF,50V
C223	NCB31HK-103A	CAPACITOR	0.01μF,50V
C225	NCS31HJ-560A	CAPACITOR	56PF,50V
C227	NCB31EK-103A	CAPACITOR	0.01μF,25V
C228	NCB31HK-102A	CAPACITOR	0.001μF,50V
C229	NCB31EK-103A	CAPACITOR	0.01μF,25V
C230	QEF81AM-105	TANTAL CAPACITOR	1μF,10V
C231	NCB31EK-103A	CAPACITOR	0.01μF,25V
C232	NCB31EK-103A	CAPACITOR	0.01μF,25V
C233	NCB31EK-103A	CAPACITOR	0.01μF,25V
C234	NCB31EK-103A	CAPACITOR	0.01μF,25V
C235	QEF81VM-224	TANTAL CAPACITOR	0.22μF,35V
C236	NCB31EK-103A	CAPACITOR	0.01μF,25V
C237	QAT3001-015	TRIMMER, PILOT BURST PHASE	
C238	NCS31HJ-5R0A	CAPACITOR	5PF,50V
C239	NCB31EK-103A	CAPACITOR	0.01μF,25V
C240	NCB31EK-103A	CAPACITOR	0.01μF,25V
C241	NCB31EK-103A	CAPACITOR	0.01μF,25V
C242	NCB31EK-103A	CAPACITOR	0.01μF,25V
C243	NCB31EK-103A	CAPACITOR	0.01μF,25V
C244	QEF80JM-106	TANTAL CAPACITOR	10μF,6.3V
C245	QEF80JM-106	TANTAL CAPACITOR	10μF,6.3V
C246	NCB31EK-103A	CAPACITOR	0.01μF,25V
C247	NCB31EK-103A	CAPACITOR	0.01μF,25V
C248	NCB31EK-103A	CAPACITOR	0.01μF,25V
C249	QEF80JM-106	TANTAL CAPACITOR	10μF,6.3V
C250	QEF80JM-106	TANTAL CAPACITOR	10μF,6.3V
C251	QEF80JM-475	TANTAL CAPACITOR	4.7μF,6.3V
C252	QEF80JM-475	TANTAL CAPACITOR	4.7μF,6.3V
C253	NCB31EK-103A	CAPACITOR	0.01μF,25V
C254	QEF81AM-475	TANTAL CAPACITOR	4.7μF,10V
C255	QAT3001-017	TRIMMER CAPACITOR, VCO	010μF
C256	NCB31CK-223A	CAPACITOR	0.022μF,16V
C257	NCB31CK-223A	CAPACITOR	0.022μF,16V
C258	QEF80JM-106	TANTAL CAPACITOR	10μF,6.3V
C259	NCB31EK-103A	CAPACITOR	0.01μF,25V
C261	NCS31HJ-471A	CAPACITOR	470PF,50V
C262	QEF80JM-225	TANTAL CAPACITOR	2.2μF,6.3V
C263	QEF81AM-105	TANTAL CAPACITOR	1μF,10V
C264	NCB31EK-153A	CAPACITOR	0.015μF,25V
C265	QEF81CM-335	TANTAL CAPACITOR	3.3μF,16V
C266	NCB31EK-103A	CAPACITOR	0.01μF,25V
C267	NCS31HJ-121A	CAPACITOR	120PF,50V
C268	QAT3001-017	TRIMMER CAPACITOR, VCXO	010μF
C269	NCB31HK-102A	CAPACITOR	0.001μF,50V
C270	NCS31HJ-5R0A	CAPACITOR	5PF,50V
C271	QEF81VM-104	TANTAL CAPACITOR	0.1μF,35V
C272	NCS31HJ-101A	CAPACITOR	100PF,50V
C273	NCB31EK-103A	CAPACITOR	0.01μF,25V
C274	QFN31HJ-103	M CAPACITOR	0.01μF,50V
C275	NCB31EK-103A	CAPACITOR	0.01μF,25V
C276	NCT08CH-270A	CAPACITOR	27PF
C277	NCT08CH-390A	CAPACITOR	39PF
C278	QETA1CM-108	E CAPACITOR	1000μF,16V
C279	NCB31EK-103A	CAPACITOR	0.01μF,25V
C280	NCS31HJ-270A	CAPACITOR	27PF,50V
C286	NCB31EK-103A	CAPACITOR	0.01μF,25V
C300	NCB31EK-103A	CAPACITOR	0.01μF,25V
C301	NEH11EM-336NP	E CAPACITOR	33μF,25V
C302	NCB31EK-103A	CAPACITOR	0.01μF,25V
C303	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C304	NEH11HM-474NZ	E CAPACITOR	0.47μF,50V
C305	NCT08CH-330A	CAPACITOR	33PF
C306	NCT08CH-390A	CAPACITOR	39PF
C307	NCT08CH-100A	CAPACITOR	10PF
C308	NCT08CH-470A	CAPACITOR	47PF
C310	NCB31EK-103A	CAPACITOR	0.01μF,25V
C311	NCB31EK-103A	CAPACITOR	0.01μF,25V
C315	NEH11CM-476NP	E CAPACITOR	47μF,16V
C317	NCB31EK-103A	CAPACITOR	0.01μF,25V
C318	NCB31HK-103A	CAPACITOR	0.01μF,50V
C319	NCR21CK-563A	CAPACITOR	0.056μF,16V
C320	NCB31EK-103A	CAPACITOR	0.01μF,25V
C321	NCB31EK-103A	CAPACITOR	0.01μF,25V
C322	NCB31EK-103A	CAPACITOR	0.01μF,25V
C323	NCB31HK-103A	CAPACITOR	0.01μF,50V
C324	NCB31EK-103A	CAPACITOR	0.01μF,25V
C325	NEH11EM-336NP	E CAPACITOR	33μF,25V
C326	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C328	NEH11CM-106N	TANTAL CAPACITOR	10μF,16V
C330	NCT08CH-220A	CAPACITOR	22PF
C331	NCS31HJ-7R0A	CAPACITOR	7PF,50V
C332	NCB31EK-103A	CAPACITOR	0.01μF,25V
C333	NEN11EM-475NZ	NP E CAPACITOR	4.7μF,25V
C334	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C335	NEH11CM-106N	E CAPACITOR	10μF,16V
C336	NCS31HJ-100A	CAPACITOR	10PF,50V
C337	NCB31EK-103A	CAPACITOR	0.01μF,25V
C338	NCS31HJ-270A	CAPACITOR	27PF,50V
C339	NEH11CM-106N	E CAPACITOR	10μF,16V
C340	NCT08CH-330A	CAPACITOR	33PF
C341	NEH11CM-106N	E CAPACITOR	10μF,16V
C342	NCS31HJ-151A	CAPACITOR	150PF,50V
C343	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C344	NCB31EK-103A	CAPACITOR	0.01μF,25V
C345	NEH11CM-106N	E CAPACITOR	10μF,16V
C346	NCT08CH-270A	CAPACITOR	27PF
C347	QEF80JM-475	TANTAL CAPACITOR	4.7μF,6.3V
C348	NCS31HJ-270A	CAPACITOR	27PF,50V
C349	NCS31HJ-820A	CAPACITOR	82PF,50V
C350	NCS31HJ-820A	CAPACITOR	82PF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C351	NCB31HK-103A	CAPACITOR	0.01µF,50V
C352	NCS31HJ-681A	CAPACITOR	680PF,50V
C353	NEH11CM-106N	E CAPACITOR	10µF,16V
C354	NEH11CM-106N	E CAPACITOR	10µF,16V
C500	QCF31HP-103	CAPACITOR	0.01µF,50V
L1	YU41134-470JY	COIL	47µH
L2	YU41134-470JY	COIL	47µH
L3	YU41134-470JY	COIL	47µH
L4	YU41134-470JY	COIL	47µH
L5	YU41134-470JY	COIL	47µH
L6	YU41134-470JY	COIL	47µH
L7	PU58201-471J	COIL	470µH
L8	YU41134-470JY	COIL	47µH
L9	YU41134-470JY	COIL	47µH
L10	YU41134-470JY	COIL	47µH
L11	PU58201-150J	COIL	15µH
L12	PU58201-150J	COIL	15µH
L13	YU41134-470JY	COIL	47µH
L14	PU58201-221J	COIL	220µH
L15	YU41134-470JY	COIL	47µH
L16	YU41134-470JY	COIL	47µH
L19	YU41134-470JY	COIL	47µH
L21	YU41134-470JY	COIL	47µH
L22	YU41134-470JY	COIL	47µH
L23	YU41134-470JY	COIL	47µH
L24	YU41134-470JY	COIL	47µH
L25	PU58201-180J	COIL	18µH
L26	YU41134-470JY	COIL	47µH
L27	PU58201-680J	COIL	68µH
L28	PU54710-822	COIL	8.2mH
L29	PU58201-8R2J	COIL	8.2µH
L30	PGZ01895	COIL, CNR DELAY	
L31	YU41134-470JY	COIL	47µH
L32	PU58201-101J	COIL	100µH
L33	PU58201-221J	COIL	220µH
L35	PU58201-181J	COIL	180µH
L36	PU58201-150J	COIL	15µH
L37	PU58201-560J	COIL	56µH
L38	PU58201-180J	COIL	18µH
L39	PU58201-100J	COIL	10µH
L40	PU58201-470J	COIL	47µH
L41	PU58201-151J	COIL	150µH
L50	YU41134-470JY	COIL	47µH
L53	PU54710-822	COIL	8.2mH
L54	YU41134-470JY	COIL	47µH
L55	PU58201-101J	COIL	100µH
L56	PU58201-330J	COIL	33µH
EQ1	PGZ01445	EQUALIZER	
EQ2	PGZ01897-R	EQUALIZER	
LPF1	PGZ01892	LOW PASS FILTER	
LPF2	PGZ01892	LOW PASS FILTER	
LPF3	PELN0320	LOW PASS FILTER	
LPF4	PGZ01898-R	LOW PASS FILTER	
LPF5	PGZ01328	LOW PASS FILTER	
LPF6	PGZ01329	LOW PASS FILTER	
BPF1	PGZ01893	BAND PASS FILTER	
BPF2	PGZ01889-P	BAND PASS FILTER	
BPF3	PGZ01890-P	BAND PASS FILTER	
DL1	PGZ00130-002	DELAY LINE	
DL3	PU58971-3	COMB FILTER	
X1	PGZ01818	CRYSTAL RESONATOR	
SW1	PU54440	SWITCH	
⚠ K1	PGZ00627Z	FERRITE BEADS	
⚠ K2	PGZ00627Z	FERRITE BEADS	
⚠ K3	PGZ00627Z	FERRITE BEADS	
⚠ K4	PGZ00627Z	FERRITE BEADS	
TH1	ERT-D2FGL101S	THERMISTOR	
TH2	ERSA22J-272	T.RESISTOR	
TH3	ERT-D2FGL101S	THERMISTOR	
TH4	QRD161J-0R0	RESISTOR	0Ω,1/6W
CL1	PGD40786	CLAMPER	
TP1	PGZ01015	TEST PIN, X32	
TP6	PU56008	TEST-PIN	
CN1	PGZ01719-30	CONNECTOR	
CN3	PGZ00723-10	CONNECTOR	
CN4	PGZ00723-13	CONNECTOR	
CN7	PGZ01756-10	CONNECTOR	
CN8	PGZ01756-09	CONNECTOR	

– DL BOARD ASSEMBLY <29> –

PWBA	PRK20252A	DL BOARD ASSY
DL101	PELN0565	2H DELAY LINE
CN1	PGZ00190-004	CONNECTOR

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C RF BOARD ASSEMBLY <02>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	PRK20221A-01	C RF BOARD ASSY
IC1	TA7347P	IC
IC2	TA8733F	IC
IC4	AN6308S	IC
IC5	AN2020S	IC
Q1	2SC4081(QRS)	TRANSISTOR
Q2	2SC4081(QRS)	TRANSISTOR
Q3	2SA1576(QRS)	TRANSISTOR
Q4	2SA1576(QRS)	TRANSISTOR
Q5	DTC144EU	TRANSISTOR
Q6	2SC4081(QRS)	TRANSISTOR
Q7	2SC4081(QRS)	TRANSISTOR
Q8	DTC144EU	TRANSISTOR
Q10	2SB709A(QR)	TRANSISTOR
Q11	DTC144EU	TRANSISTOR
Q12	DTC144EU	TRANSISTOR
Q13	2SC4081(QRS)	TRANSISTOR
Q14	2SA1576(QRS)	TRANSISTOR
Q15	2SC4081(QRS)	TRANSISTOR
Q16	2SA1576(QRS)	TRANSISTOR
Q17	2SC4081(QRS)	TRANSISTOR
Q18	2SB709A(QR)	TRANSISTOR
Q19	DTC144EU	TRANSISTOR
Q20	2SC4081(QRS)	TRANSISTOR
Q21	2SA1576(QRS)	TRANSISTOR
Q22	2SA1576(QRS)	TRANSISTOR
Q23	DTC144EU	TRANSISTOR
Q24	2SA1576(QRS)	TRANSISTOR
Q25	2SC4081(QRS)	TRANSISTOR
Q26	2SC4081(QRS)	TRANSISTOR
Q27	DTC144EU	TRANSISTOR
Q28	2SC4081(QRS)	TRANSISTOR
Q29	2SC4081(QRS)	TRANSISTOR
Q30	2SC4081(QRS)	TRANSISTOR
Q31	2SC4081(QRS)	TRANSISTOR
Q32	2SC4081(QRS)	TRANSISTOR
Q33	2SC4081(QRS)	TRANSISTOR
Q34	2SC4081(QRS)	TRANSISTOR
Q35	2SC4081(QRS)	TRANSISTOR
Q36	2SC4081(QRS)	TRANSISTOR
Q37	2SC4081(QRS)	TRANSISTOR
Q38	2SC4081(QRS)	TRANSISTOR
Q39	2SC4081(QRS)	TRANSISTOR
Q40	2SA1576(QRS)	TRANSISTOR
Q41	2SC4081(QRS)	TRANSISTOR
Q42	2SC4081(QRS)	TRANSISTOR
Q43	2SA1576(QRS)	TRANSISTOR
Q44	DTC144EU	TRANSISTOR
Q45	2SA1576(QRS)	TRANSISTOR
Q46	2SA1576(QRS)	TRANSISTOR

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D1	MA157	DIODE	
D2	DAN202U	DIODE	
R1	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R2	NRSA63J-181N	RESISTOR	180Ω,1/16W
R3	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R4	NVP1415-502N	V RESISTOR, VHS REC FM LEV	5KΩ,1/4W
R5	NVP1415-502N	V RESISTOR, S-VHS REC FM LEV	5KΩ,1/4W
R6	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R7	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R8	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R9	NRSA63J-391N	RESISTOR	390Ω,1/16W
R10	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R11	NRSA63J-391N	RESISTOR	390Ω,1/16W
R12	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R13	NRSA63J-101N	RESISTOR	100Ω,1/16W
R14	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R15	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R16	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R17	NRSA63J-821N	RESISTOR	820Ω,1/16W
R18	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R19	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R20	NRSA63J-823N	RESISTOR	82KΩ,1/16W
R21	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R22	NRSA63J-681N	RESISTOR	680Ω,1/16W
R25	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R26	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R27	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R28	NRSA63J-681N	RESISTOR	680Ω,1/16W
R29	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R30	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R31	NRSA63J-681N	RESISTOR	680Ω,1/16W
R32	NVP1415-202N	V RESISTOR, VHS EQ	2KΩ,1/4W
R33	NRSA63J-821N	RESISTOR	820Ω,1/16W
R34	NRSA63J-681N	RESISTOR	680Ω,1/16W
R35	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R36	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R37	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R38	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R39	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R40	NRSA63J-331N	RESISTOR	330Ω,1/16W
R41	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R42	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R43	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R44	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R45	NRSA63J-681N	RESISTOR	680Ω,1/16W
R46	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R47	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R48	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R49	NVP1415-202N	V RESISTOR, S-VHS EQ CH-1	2KΩ,1/4W
R50	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R51	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R52	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R53	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R54	NVP1415-202N	V RESISTOR, S-VHS EQ CH-2	2KΩ,1/4W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R55	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R56	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R58	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R59	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R60	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R61	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R62	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R63	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R64	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R65	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R66	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R67	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R68	NVP1415-202N	V RESISTOR, S-VHS REC DELAY	2KΩ,1/4W
R69	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R70	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R71	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R72	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R73	NVP1415-202N	V RESISTOR, VHS REC DELAY	2KΩ,1/4W
R74	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R75	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R76	NRSA63J-181N	RESISTOR	180Ω,1/16W
R77	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R78	NRSA63J-752N	RESISTOR	7.5KΩ,1/16W
R79	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R80	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R81	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R82	NRSA63J-221N	RESISTOR	220Ω,1/16W
R83	NRSA63J-221N	RESISTOR	220Ω,1/16W
R84	NRSA63J-221N	RESISTOR	220Ω,1/16W
R85	NRSA63J-221N	RESISTOR	220Ω,1/16W
R86	NRSA63J-221N	RESISTOR	220Ω,1/16W
R87	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R88	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R89	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R90	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R91	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R92	NRSA63J-561N	RESISTOR	560Ω,1/16W
R93	NRSA63J-561N	RESISTOR	560Ω,1/16W
R94	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R95	NRSA63J-561N	RESISTOR	560Ω,1/16W
R96	NRSA63J-561N	RESISTOR	560Ω,1/16W
R97	NRSA63J-100N	RESISTOR	10Ω,1/16W
R98	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R99	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R100	NRSA63J-391N	RESISTOR	390Ω,1/16W
R101	NRSA63J-471N	RESISTOR	470Ω,1/16W
R102	NRSA63J-391N	RESISTOR	390Ω,1/16W
R103	NRSA63J-151N	RESISTOR	150Ω,1/16W
R104	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R105	NVP1415-102N	V RESISTOR, VHS REC COLOR LEV	1KΩ,1/4W
R106	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R107	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R108	NVP1415-102N	V RESISTOR, S-VHS REC C LEV	1KΩ,1/4W
R109	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R110	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R111	NRSA63J-473N	RESISTOR	47KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R112	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R113	NRSA63J-821N	RESISTOR	820Ω,1/16W
R114	NRSA63J-821N	RESISTOR	820Ω,1/16W
R115	NRSA63J-561N	RESISTOR	560Ω,1/16W
R116	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R117	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R118	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R119	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R120	NRSA63J-331N	RESISTOR	330Ω,1/16W
R125	NRSA63J-331N	RESISTOR	330Ω,1/16W
C1	NCB31EK-103A	CAPACITOR	0.01µF,25V
C3	NCB31EK-103A	CAPACITOR	0.01µF,25V
C4	NCB31EK-103A	CAPACITOR	0.01µF,25V
C5	NCS31HJ-121A	CAPACITOR	120PF,50V
C6	NCF31CZ-104A	CAPACITOR	0.1µF,16V
C7	NCB31EK-103A	CAPACITOR	0.01µF,25V
C8	NCS31HJ-330A	CAPACITOR	33PF,50V
C9	NCB31EK-103A	CAPACITOR	0.01µF,25V
C10	NEH11EM-336NP	E CAPACITOR	33µF,25V
C11	NCB31EK-103A	CAPACITOR	0.01µF,25V
C12	NCB31EK-103A	CAPACITOR	0.01µF,25V
C14	NCB31EK-103A	CAPACITOR	0.01µF,25V
C15	NCF31CZ-104A	CAPACITOR	0.1µF,16V
C16	NCB31EK-103A	CAPACITOR	0.01µF,25V
C17	NEH11EM-336NP	E CAPACITOR	33µF,25V
C21	NCS31HJ-220A	CAPACITOR	22PF,50V
C22	NCB31EK-103A	CAPACITOR	0.01µF,25V
C23	NCS31HJ-270A	CAPACITOR	27PF,50V
C24	NCB31EK-103A	CAPACITOR	0.01µF,25V
C27	NCS31HJ-271A	CAPACITOR	270PF,50V
C28	NCB31HK-102A	CAPACITOR	0.001µF,50V
C29	NCS31HJ-331A	CAPACITOR	330PF,50V
C30	NCS31HJ-470A	CAPACITOR	47PF,50V
C31	NCB31EK-103A	CAPACITOR	0.01µF,25V
C32	NCB31EK-103A	CAPACITOR	0.01µF,25V
C33	NEH11EM-336NP	E CAPACITOR	33µF,25V
C34	NCB31EK-103A	CAPACITOR	0.01µF,25V
C35	NCS31HJ-220A	CAPACITOR	22PF,50V
C36	NCB31EK-103A	CAPACITOR	0.01µF,25V
C38	NCB31EK-103A	CAPACITOR	0.01µF,25V
C40	NCB31EK-103A	CAPACITOR	0.01µF,25V
C41	NCS31HJ-271A	CAPACITOR	270PF,50V
C42	NCS31HJ-271A	CAPACITOR	270PF,50V
C44	NCB31CK-223A	CAPACITOR	0.022µF,16V
C45	NCS31HJ-101A	CAPACITOR	100PF,50V
C46	NCB31EK-103A	CAPACITOR	0.01µF,25V
C47	NCB31EK-103A	CAPACITOR	0.01µF,25V
C48	NEH11EM-336NP	E CAPACITOR	33µF,25V
C49	NCB31EK-103A	CAPACITOR	0.01µF,25V
C50	NCS31HJ-151A	CAPACITOR	150PF,50V
C51	NCS31HJ-151A	CAPACITOR	150PF,50V
C52	NCB31EK-103A	CAPACITOR	0.01µF,25V
C53	NCB31EK-103A	CAPACITOR	0.01µF,25V
C54	NCB31EK-103A	CAPACITOR	0.01µF,25V

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#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C55	NCB31EK-103A	CAPACITOR	0.01μF,25V
C56	NCB31CK-223A	CAPACITOR	0.022μF,16V
C57	NCB31EK-103A	CAPACITOR	0.01μF,25V
C58	NCB31EK-103A	CAPACITOR	0.01μF,25V
C59	NCB31EK-103A	CAPACITOR	0.01μF,25V
C60	NCB31EK-103A	CAPACITOR	0.01μF,25V
C61	NCB31EK-103A	CAPACITOR	0.01μF,25V
C62	NCB31EK-103A	CAPACITOR	0.01μF,25V
C63	NCS31HJ-681A	CAPACITOR	680PF,50V
C64	NCB31EK-103A	CAPACITOR	0.01μF,25V
C65	NCS31HJ-151A	CAPACITOR	150PF,50V
C66	NEH11CM-106N	E CAPACITOR	10μF,16V
C67	NCB31EK-103A	CAPACITOR	0.01μF,25V
C68	NCS31HJ-101A	CAPACITOR	100PF,50V
C69	NCS31HJ-100A	CAPACITOR	10PF,50V
C70	NCB31EK-103A	CAPACITOR	0.01μF,25V
C71	NCB31EK-103A	CAPACITOR	0.01μF,25V
C72	NCB31EK-103A	CAPACITOR	0.01μF,25V
C73	NCB31EK-103A	CAPACITOR	0.01μF,25V
C74	NCB31EK-103A	CAPACITOR	0.01μF,25V
C75	NEH11EM-336NP	E CAPACITOR	33μF,25V
C76	NCB31EK-103A	CAPACITOR	0.01μF,25V
C77	NEH11CM-106N	E CAPACITOR	10μF,16V
C79	NCB31EK-103A	CAPACITOR	0.01μF,25V
C80	NCS31HJ-680A	CAPACITOR	68PF,50V
C83	NCS31HJ-120A	CAPACITOR	12PF,50V
C84	NCS31HJ-681A	CAPACITOR	680PF,50V
L1	YU41134-470JY	COIL	47μH
L2	PU58201-4R7J	COIL	4.7μH
L3	YU41134-470JY	COIL	47μH
L4	PU58201-5R6J	COIL	5.6μH
L5	YU41134-470JY	COIL	47μH
L6	PU58201-560J	COIL	56μH
L8	PU58201-221J	COIL	220μH
L9	PU58201-560J	COIL	56μH
L10	PU58201-150J	COIL	15μH
L11	YU41134-470JY	COIL	47μH
L12	PU58201-270J	COIL	27μH
L14	PU58201-221J	COIL	220μH
L15	PU58201-150J	COIL	15μH
L16	PU58201-101J	COIL	100μH
L17	PU58201-5R6J	COIL	5.6μH
L18	PU58201-390J	COIL	39μH
L19	YU41134-470JY	COIL	47μH
L21	PU58201-220J	COIL	22μH
L22	PU58201-180J	COIL	18μH
L23	PU58201-221J	COIL	220μH
TP1	PGZ01015	TEST PIN, X7	
CN1	PGZ00724-10	CONNECTOR	
CN2	PGZ00724-13	CONNECTOR	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

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A EQ BOARD ASSEMBLY <03>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PRK20170B	AUTO EQ BOARD ASSY	
IC1	JCL0009	IC	
IC2	MN3106S	IC	
IC3	TC4S69F	IC	
Q1	DTC144EU	TRANSISTOR	
Q2	DTA144EU	TRANSISTOR	
Q3	DTC144EU	TRANSISTOR	
Q4	2SB709A(QR)	TRANSISTOR	
Q5	DTA144EU	TRANSISTOR	
Q8	2SA1576(QRS)	TRANSISTOR	
Q9	2SC4081(QRS)	TRANSISTOR	
Q10	2SC4081(QRS)	TRANSISTOR	
Q11	2SC4081(QRS)	TRANSISTOR	
Q12	2SA1576(QRS)	TRANSISTOR	
Q193	2SA1576(QRS)	TRANSISTOR	
Q194	2SA1576(QRS)	TRANSISTOR	
Q195	DTC144EU	TRANSISTOR	
R1	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R2	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R3	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R4	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R5	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R6	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R7	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R8	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R10	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R12	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R13	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R14	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R15	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R16	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R25	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R26	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R27	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R28	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R29	NVP1415-102N	V RESISTOR, AUTO EQ 625KHZ	1KΩ,1/4W
R30	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R31	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R32	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R33	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R34	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R35	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R36	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R37	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R38	NVP1415-102N	V RESISTOR, AUTO EQ 3.8MHZ	1KΩ,1/4W
R39	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R40	NRSA63J-102N	RESISTOR	1KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R41	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R42	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R43	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R44	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R46	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R50	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R51	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R52	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R53	NRSA63J-101N	RESISTOR	100Ω,1/16W
R181	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R182	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R394	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R396	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R397	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R398	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R399	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R400	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R401	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R402	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R403	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R404	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R461	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R462	NRSA63J-103N	RESISTOR	10KΩ,1/16W
C1	NCB31EK-103A	CAPACITOR	0.01μF,25V
C2	QEF81CM-106	TANTAL CAPACITOR	10μF,16V
C5	NCB31EK-103A	CAPACITOR	0.01μF,25V
C6	QEF81CM-106	TANTAL CAPACITOR	10μF,16V
C7	NCS31HJ-271A	CAPACITOR	270PF,50V
C8	NCS31HJ-101A	CAPACITOR	100PF,50V
C9	NCB31EK-103A	CAPACITOR	0.01μF,25V
C10	NCB31EK-103A	CAPACITOR	0.01μF,25V
C11	NCB31EK-103A	CAPACITOR	0.01μF,25V
C12	NCB31EK-103A	CAPACITOR	0.01μF,25V
C13	NCB31EK-103A	CAPACITOR	0.01μF,25V
C21	NCB31EK-103A	CAPACITOR	0.01μF,25V
C24	QEF81AM-225	TANTAL CAPACITOR	2.2μF,10V
C25	NCB31EK-103A	CAPACITOR	0.01μF,25V
C26	QEF80JM-476	TANTAL CAPACITOR	47μF,6.3V
C27	NCB31EK-103A	CAPACITOR	0.01μF,25V
C28	NCB31EK-472A	CAPACITOR	0.0047μF,25V
C85	NCB31EK-103A	CAPACITOR	0.01μF,25V
C268	NCS31HJ-151A	CAPACITOR	150PF,50V
C270	NCS31HJ-151A	CAPACITOR	150PF,50V
C273	NCB31EK-103A	CAPACITOR	0.01μF,25V
C275	NCS31HJ-221A	CAPACITOR	220PF,50V
C276	NCB31EK-103A	CAPACITOR	0.01μF,25V
C277	QEF80JM-476	TANTAL CAPACITOR	47μF,6.3V
C279	NCS31HJ-330A	CAPACITOR	33PF,50V
C282	NCS31HJ-121A	CAPACITOR	120PF,50V
C285	NCB31EK-103A	CAPACITOR	0.01μF,25V
L1	PU58201-101J	COIL	100μH
L3	PU58201-101J	COIL	100μH
L5	PU58201-101J	COIL	100μH
L7	PU58201-101J	COIL	100μH
L52	PU58201-331J	COIL	330μH
L53	PU58201-560J	COIL	56μH
L54	PU58201-331J	COIL	330μH
L55	PU58201-680J	COIL	68μH
L56	PU58201-101J	COIL	100μH
LPF1	PGZ01329	LOW PASS FILTER	
BPF1	YU40507-R	BAND PASS FILTER(3.58M)	
SW1	PGZ01681-06	DIP SWITCH	
⚠ K1	PGZ00627Z	FERRITE BEADS	
⚠ K2	PGZ00627Z	FERRITE BEADS	
⚠ K5	PGZ00627Z	FERRITE BEADS	
K6	PGZ00627Z	FERRITE BEADS	
K7	PGZ00627Z	FERRITE BEADS	
TP1	PGZ01015	TEST PIN, X2(TP1,9)	
CN1	PGZ00724-10	CONNECTOR	
CN2	PGZ00724-09	CONNECTOR	

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PRE/REC BOARD ASSEMBLY <04>

PWBA	PRK20245A-01	PRE/REC BOARD ASSY
IC1	BA7743FS	IC
IC3	TC4S71F	IC
IC6	UPC2320GS	IC
IC7	5VT51	IC
Q1	2SA1577(PQ)	TRANSISTOR
Q2	DTA114EU	TRANSISTOR
Q3	DTC144EU	TRANSISTOR
Q6	2SA1577(PQ)	TRANSISTOR
Q10	DTC144EU	TRANSISTOR
Q11	2SC4081(QRS)	TRANSISTOR
Q12	2SC4081(QRS)	TRANSISTOR
Q14	2SC4081(QRS)	TRANSISTOR

<04>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
Q21	DTC124EU	TRANSISTOR	
Q22	2SA1577(PQ)	TRANSISTOR	
Q32	2SA1577(PQ)	TRANSISTOR	
Q34	DTC124EU	TRANSISTOR	
D2	DAN202U	DIODE	
D3	DAN202U	DIODE	
R1	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R2	NRSA63J-100N	RESISTOR	10Ω,1/16W
R3	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R4	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R5	NRSA63J-561N	RESISTOR	560Ω,1/16W
R6	NRSA63J-561N	RESISTOR	560Ω,1/16W
R7	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
R8	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R9	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R10	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R11	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R12	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R13	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R14	NRSA63J-912N	RESISTOR	9.1KΩ,1/16W
R15	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R16	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R17	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R30	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R31	NRSA63J-821N	RESISTOR	820Ω,1/16W
R32	NRSA63J-821N	RESISTOR	820Ω,1/16W
R33	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R34	NRSA63J-821N	RESISTOR	820Ω,1/16W
R36	NRSA63J-561N	RESISTOR	560Ω,1/16W
R37	NRSA63J-681N	RESISTOR	680Ω,1/16W
R38	NRSA63J-681N	RESISTOR	680Ω,1/16W
R39	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R40	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R41	NRSA63J-220N	RESISTOR	22Ω,1/16W
R42	NRSA63J-3R9N	RESISTOR	3.9Ω,1/16W
R43	NRSA63J-3R9N	RESISTOR	3.9Ω,1/16W
R44	NRSA63J-220N	RESISTOR	22Ω,1/16W
R45	NRSA63J-220N	RESISTOR	22Ω,1/16W
R46	NRSA63J-220N	RESISTOR	22Ω,1/16W
R47	NRSA63J-221N	RESISTOR	220Ω,1/16W
R48	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R51	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R52	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R70	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R72	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R73	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R80	NRSA63J-3R9N	RESISTOR	3.9Ω,1/16W
R82	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R84	NRSA63J-0R0N	RESISTOR	0Ω,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C1	NCB31EK-103A	CAPACITOR	0.01μF,25V
C2	NCS31HJ-101A	CAPACITOR	100PF,50V
C3	QCF81CZ-105	CAPACITOR	1μF,16V
C4	NCS31HJ-271A	CAPACITOR	270PF,50V
C5	NCS31HJ-271A	CAPACITOR	270PF,50V
C6	NCB31HK-821A	CAPACITOR	820PF,50V
C7	NCB31HK-821A	CAPACITOR	820PF,50V
C8	QCF81CZ-105	CAPACITOR	1μF,16V
C9	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C10	NRSA63J-103N	RESISTOR	10KΩ,1/16W
C11	NCB31HK-102A	CAPACITOR	0.001μF,50V
C12	NCB31HK-102A	CAPACITOR	0.001μF,50V
C13	NCB31EK-103A	CAPACITOR	0.01μF,25V
C14	NCB31EK-103A	CAPACITOR	0.01μF,25V
C15	NCB31EK-103A	CAPACITOR	0.01μF,25V
C16	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C17	NCB31EK-103A	CAPACITOR	0.01μF,25V
C18	NCB31EK-103A	CAPACITOR	0.01μF,25V
C19	NCB31EK-103A	CAPACITOR	0.01μF,25V
C29	QCYA1EK-104	CAPACITOR	0.1μF,25V
C30	NEH11CM-476NP	E CAPACITOR	47μF,16V
C31	QCYA1EK-104	CAPACITOR	0.1μF,25V
C32	NCB31EK-103A	CAPACITOR	0.01μF,25V
C33	NCB31EK-103A	CAPACITOR	0.01μF,25V
C34	NEE21EM-474RY	E CAPACITOR	0.47μF,25V
C35	NCB31EK-103A	CAPACITOR	0.01μF,25V
C36	NCB31EK-103A	CAPACITOR	0.01μF,25V
C37	QCYA1HK-103	CAPACITOR	0.01μF,50V
C38	NEH11CM-476NP	E CAPACITOR	47μF,16V
C39	QCYA1EK-104	CAPACITOR	0.1μF,25V
C40	QCYA1EK-104	CAPACITOR	0.1μF,25V
C41	NEE21EM-474RY	E CAPACITOR	0.47μF,25V
C42	QCYA1EK-104	CAPACITOR	0.1μF,25V
C43	QCYA1EK-104	CAPACITOR	0.1μF,25V
C44	NEE21EM-474RY	E CAPACITOR	0.47μF,25V
C45	NEE21EM-474RY	E CAPACITOR	0.47μF,25V
C46	QCYA1EK-104	CAPACITOR	0.1μF,25V
C47	QCYA1EK-104	CAPACITOR	0.1μF,25V
C48	NEE21EM-474RY	E CAPACITOR	0.47μF,25V
C49	QCYA1EK-104	CAPACITOR	0.1μF,25V
C50	QCYA1EK-104	CAPACITOR	0.1μF,25V
C52	NCS31HJ-220A	CAPACITOR	22PF,50V
C53	NCS31HJ-330A	CAPACITOR	33PF,50V
C54	NCB31EK-103A	CAPACITOR	0.01μF,25V
C55	NCS31HJ-220A	CAPACITOR	22PF,50V
C61	NCB31EK-103A	CAPACITOR	0.01μF,25V
C62	NEE21AM-106RY	TANTAL CAPACITOR	10μF,10V
C63	NCS31HJ-221A	CAPACITOR	220PF,50V
C69	NCB31EK-103A	CAPACITOR	0.01μF,25V
C75	NCB31EK-103A	CAPACITOR	0.01μF,25V
C76	NCB31EK-103A	CAPACITOR	0.01μF,25V
C78	NCB31EK-103A	CAPACITOR	0.01μF,25V
C81	NCB31EK-103A	CAPACITOR	0.01μF,25V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
L1	PU58201-101J	COIL	100μH
L2	PU58201-101J	COIL	100μH
L3	PU58201-101J	COIL	100μH
L7	PU58201-101J	COIL	100μH
L8	PU58201-101J	COIL	100μH
L9	PU58201-101J	COIL	100μH
L10	PELN0840-1R2MY	COIL	
L11	PU56175	S.TRANS	
SLD1	PRS40032	SHIELD CASE 1	
SLD2	PRS40033	SHIELD CASE 2	
TP1	PGZ01015	TEST PIN, X6(TP1-4,9,10)	
TP7	PU56008	TEST-PIN, X2(TP7,8)	
CN1	PGZ01938-011Z	CONNECTOR	
CN2	PGZ01932-013Z	CONNECTOR	
CN3	YU41356-9-R	CAP HOUSING,(BOARD TO BOARD)	

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SYSCON/SERVO BOARD ASSEMBLY <05>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PRK30119B	SYSCON/SERVO BOARD ASSY	
IC1	BA6405F	IC	
IC2	XRA10324F	IC	
IC3	BA728F	IC	
IC4	TC7W04F	IC	
IC5	BA10393F	IC	
IC7	BU3779S	IC	
IC12	MN50005JVES	IC	
IC15	TC4S584F	IC	
IC16	TC4S584F	IC	
IC17	M38063E6-359FP	IC	
IC18	S-8054HN-CB-X	IC	
IC19	TC4021BF	IC	
IC20	BA6109U2	IC	
IC21	M6M80011AP	IC	
IC22	TC4S69F	IC	
IC23	BA10339F	IC	
IC24	S-81252HG	IC	
IC25	TC4021BF	IC	
IC27	TC4S11F	IC	
IC28	M51943BML	IC	
IC29	TC4W53F	IC	
IC30	TC4W53F	IC	
IC402	NJM2903M	IC	
IC403	TC4538BF	IC	
IC404	TC4S81F	IC	
IC501	TC4013BF	IC	
IC502	TC4W53F	IC	
Q1	DTC124EU	TRANSISTOR	
Q2	DTC124EU	TRANSISTOR	
Q3	DTC124EU	TRANSISTOR	
Q5	DTC124EU	TRANSISTOR	
Q6	2SB798	TRANSISTOR	
Q7	2SA1502-XE	TRANSISTOR	
Q8	2SB798	TRANSISTOR	
Q9	2SA1502-XE	TRANSISTOR	
Q10	2SC2412K(QR)	TRANSISTOR	
Q12	2SC2412K(QR)	TRANSISTOR	
Q13	DTA143ZK	TRANSISTOR	
Q14	DTA143ZK	TRANSISTOR	
Q15	DTC124EU	TRANSISTOR	
Q17	2SC2412K(QR)	TRANSISTOR	
Q18	DTA124EU	TRANSISTOR	
Q19	DTC124EU	TRANSISTOR	
Q20	2SC2412K(QR)	TRANSISTOR	
Q25	FMG1	TRANSISTOR	
Q26	FMG1	TRANSISTOR	
Q27	FMG1	TRANSISTOR	
Q28	FMC2	TRANSISTOR	
Q29	DTC144EU	TRANSISTOR	
Q30	DTC124EU	TRANSISTOR	
Q501	DTC124EU	TRANSISTOR	
D1	ERA82-004	DIODE	
D2	ERA82-004	DIODE	
D3	RD5.6ESB2	ZENER DIODE	
D4	RD6.8ESB2	ZENER DIODE	
D5	DAN202U	DIODE	
D6	DAN202U	DIODE	
D7	DA204U	DIODE	
D8	DAN202U	DIODE	
D12	RD12EB2	ZENER DIODE	
D13	RD12EB2	ZENER DIODE	
D14	RD12EB2	ZENER DIODE	
D17	RD3.3EB2	ZENER DIODE	
D18	1SS133	DIODE	
D19	RD12EB2	ZENER DIODE	
D20	RD12EB2	ZENER DIODE	
D21	RD12EB2	ZENER DIODE	
D23	RD12EB2	ZENER DIODE	
D25	MA742	DIODE	
D26	MA742	DIODE	
D28	RD9.1ESB2	ZENER DIODE	
D30	1SS99	DIODE	
D401	DAN202U	DIODE	
D402	DAN202U	DIODE	
R1	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W

<05>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R2	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R3	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R4	QRSA08J-302YN	RESISTOR	3KΩ,1/10W
R5	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R6	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R7	QRSA08J-272YN	RESISTOR	2.7KΩ,1/10W
R8	QRSA08J-112YN	RESISTOR	1.1KΩ,1/10W
R9	QRSA08J-304YN	RESISTOR	300KΩ,1/10W
R10	QRSA08J-304YN	RESISTOR	300KΩ,1/10W
R11	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R12	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R13	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R14	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R15	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R16	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R17	NRSA63J-474N	RESISTOR	470KΩ,1/16W
R18	NRSA63J-471N	RESISTOR	470Ω,1/16W
R19	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R20	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R21	NRSA63J-274N	RESISTOR	270KΩ,1/16W
R22	NRSA63J-823N	RESISTOR	82KΩ,1/16W
R23	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R24	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R25	NRSA63J-684N	RESISTOR	680KΩ,1/16W
R26	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R27	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R28	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R29	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R30	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R31	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R32	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R33	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R35	NRSA63J-274N	RESISTOR	270KΩ,1/16W
R36	NRSA63J-274N	RESISTOR	270KΩ,1/16W
R39	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R40	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R41	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R42	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R44	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R45	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R46	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R47	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R48	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R50	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R51	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R52	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R53	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R64	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R65	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R66	NRSA63J-274N	RESISTOR	270KΩ,1/16W
R67	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R68	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R69	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R72	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R73	NRSA63J-223N	RESISTOR	22KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R74	PU59237-223	V RESISTOR, TRACKING PRESET	
R75	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R76	NRSA63J-563N	RESISTOR	56KΩ,1/16W
R77	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R78	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R79	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R80	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R81	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R82	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R83	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R84	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R85	PU59237-474	V RESISTOR, SWITCHING POINT	
R86	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R87	NRSA63J-124N	RESISTOR	120KΩ,1/16W
R88	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R89	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R90	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R92	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R93	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R94	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R95	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R96	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R103	NRSA63J-274N	RESISTOR	270KΩ,1/16W
R104	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R105	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R106	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R107	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R108	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R109	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R110	PU59237-472	V RESISTOR, BATTERY V DET	
R111	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R112	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R113	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R114	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R115	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R116	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R117	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R118	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R119	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R120	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R121	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R122	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R123	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R124	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R125	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R126	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R127	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R128	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R129	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R130	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R131	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R133	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R134	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R135	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R136	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R137	NRSA63J-333N	RESISTOR	33KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R138	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R139	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R140	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R141	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R142	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R143	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R144	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R145	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R146	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R147	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R148	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R149	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R150	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R151	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R152	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R153	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R154	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R155	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R156	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R157	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R158	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R159	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R160	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R161	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R162	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R163	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R164	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R165	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R166	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R167	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R168	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R169	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R170	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R171	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R172	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R173	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R174	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R175	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R176	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R177	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R178	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R179	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R180	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R181	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R182	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R183	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R184	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R185	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R186	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R187	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R188	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R189	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R190	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R192	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R193	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R194	NRSA63J-102N	RESISTOR	1KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R195	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R196	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R198	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R199	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R208	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R209	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R210	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R211	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R212	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R213	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R214	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R215	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R217	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R220	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R221	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R222	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R223	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R224	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R227	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R228	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R230	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R401	PU59237-334	V RESISTOR,FRAME SERVO	
R402	NRSA63J-184N	RESISTOR	180KΩ,1/16W
R403	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R404	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R405	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R406	NRSA63J-152N	RESISTOR	1.5KΩ,1/16W
R407	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R501	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R502	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R503	NRSA63J-333N	RESISTOR	33KΩ,1/16W
C1	QERF0JM-107	E CAPACITOR	100μF,6.3V
C2	NCB31EK-103A	CAPACITOR	0.01μF,25V
C3	NCB31EK-103A	CAPACITOR	0.01μF,25V
C4	NCS31HJ-121A	CAPACITOR	120PF,50V
C5	NCS31HJ-121A	CAPACITOR	120PF,50V
C6	PGZ01800-687	E CAPACITOR	-600μF
C7	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C8	QER41CM-107	E CAPACITOR	100μF,16V
C9	QCYA1HK-222	CAPACITOR	0.0022μF,50V
C10	QER41CM-107	E CAPACITOR	100μF,16V
C11	QCYA1HK-332	CAPACITOR	0.0033μF,50V
C12	QERF1HM-105	E CAPACITOR	1μF,50V
C13	NCB31EK-103A	CAPACITOR	0.01μF,25V
C14	QERF1CM-106	E CAPACITOR	10μF,16V
C15	NCS31HJ-471A	CAPACITOR	470PF,50V
C16	QERF1CM-106	E CAPACITOR	10μF,16V
C17	QERF1CM-106	E CAPACITOR	10μF,16V
C18	NCB31HK-102A	CAPACITOR	0.001μF,50V
C19	QERF1CM-476	E CAPACITOR	47μF,16V
C20	QERF1HM-105	E CAPACITOR	1μF,50V
C21	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C22	NCB31HK-102A	CAPACITOR	0.001μF,50V

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#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C23	QERF0JM-226	E CAPACITOR	22μF,6.3V
	C24	QEPA1HM-224	NP E CAPACITOR	0.22μF,50V
	C25	NCR31CK-153A	CAPACITOR	0.015μF,16V
	C26	QEPA1HM-224	NP E CAPACITOR	0.22μF,50V
	C27	NCB31HK-332A	CAPACITOR	0.0033μF,50V
	C28	QEPA1HM-474	NP E CAPACITOR	0.47μF,50V
	C30	QERF0JM-107	E CAPACITOR	100μF,6.3V
	C31	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C32	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C33	QFN41HJ-823	M CAPACITOR	0.082μF,50V
	C34	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C35	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C36	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C37	NCB31HK-332A	CAPACITOR	0.0033μF,50V
	C38	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C40	QCYA1HK-152	CAPACITOR	0.0015μF,50V
	C41	QCSA1HJ-330	CAPACITOR	33PF,50V
	C42	QCSA1HJ-330	CAPACITOR	33PF,50V
	C43	QCSA1HJ-561	CAPACITOR	560PF,50V
	C44	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C45	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C46	QCSA1HJ-330	CAPACITOR	33PF,50V
	C47	QCSA1HJ-330	CAPACITOR	33PF,50V
	C48	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C49	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C61	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C62	QCSA1HJ-100	CAPACITOR	10PF,50V
	C63	QCSA1HJ-100	CAPACITOR	10PF,50V
	C64	QERF1HM-105	E CAPACITOR	1μF,50V
	C65	QEPA1HM-105	NP E CAPACITOR	1μF,50V
	C66	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C67	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C68	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C69	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C70	QEA40HZ-224	E CAPACITOR (DOUBLE)	0.22F,5.5V
	C71	NEE21EM-105RY	TANTAL CAPACITOR	1μF,25V
	C72	NEE21EM-105RY	TANTAL CAPACITOR	1μF,25V
	C73	QERF0JM-107	E CAPACITOR	100μF,6.3V
	C74	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C75	NCB31CK-223A	CAPACITOR	0.022μF,16V
	C76	NCB31CK-223A	CAPACITOR	0.022μF,16V
	C77	NCB31CK-223A	CAPACITOR	0.022μF,16V
	C401	NFV31CJ-104AY	TF CAPACITOR	0.1μF,16V
	C402	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C404	NCB31EK-153A	CAPACITOR	0.015μF,25V
	C501	NEE21AM-475RY	TANTAL CAPACITOR	4.7μF,10V
	C502	NEE21AM-475RY	TANTAL CAPACITOR	4.7μF,10V
	L1	PU56181-151	COIL	150μH
⚠	CF1	PU55407	RESONATOR	
⚠	X1	PGZ00857	CRYSTAL RESONATOR	
⚠	X2	PGZ01577	CRYSTAL RESONATOR	
	K1	PGZ00354	FERRATE BEADS	
⚠	TH1	PU52108-2R2	POSITIVE THERMISTOR	
	T1	YU41190	TRANS	
	T2	YU41190	TRANS	
	BKT1	PRD43842	BRACKET, X2	
	SCW1	PRD30093	SCREW, X2	
	SLD1	PRS40029	SHIELD PLATE	
	SLD2	PRS40025	SHIELD CASE	
	SLD3	PU61042	SHIELD COVER	
	SLD4	PU61043	SHIELD PLATE	
	TP1	PGZ01015	TEST PIN, X13(TP1-6,8-14)	
	TP7	PU56008	TEST-PIN	
	CN1	PGZ01519-100	CONNECTOR	

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REGULATOR BOARD ASSEMBLY <06>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PRK20163B-03	REGULATOR BOARD ASSY
⚠	STK1	PRD30072-72	STICKER, X2
⚠	STK2	PRD30072-73	STICKER
⚠	STK3	PRD30072-74	STICKER
	IC1	MB3782PF	IC
	IC2	M5237ML	IC
	IC3	S-81252HG	IC
	Q1	2SB1019(Y)	TRANSISTOR
	Q2	2SJ146	FE TRANSISTOR
	Q3	2SB1073(PQ)-XE	TRANSISTOR
	Q4	2SB1073(PQ)-XE	TRANSISTOR
	Q5	2SB1073(PQ)-XE	TRANSISTOR
	Q6	2SB1132(QR)	TRANSISTOR
	Q7	DTC124EU	TRANSISTOR
	D2	ERA82-004	DIODE
	D3	ERA82-004	DIODE

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D4	ERA82-004	DIODE	
D5	1SS133	DIODE	
D6	RD2.0EB1	ZENER DIODE	
R1	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R2	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R3	QRSA08J-824YN	RESISTOR	820KΩ,1/10W
R4	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R5	QRSA08J-123YN	RESISTOR	12KΩ,1/10W
R6	NVP1301-102N	V RESISTOR	1KΩ
R7	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
R8	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R9	QRSA08J-154YN	RESISTOR	150KΩ,1/10W
R10	QRSA08J-154YN	RESISTOR	150KΩ,1/10W
R11	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R12	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
R13	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R14	NVP1301-472N	V RESISTOR	4.7KΩ
R15	QRSA08J-154YN	RESISTOR	150KΩ,1/10W
R16	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R17	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R18	NVP1301-103N	V RESISTOR	10KΩ
R19	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R20	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R21	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R22	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
R23	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R24	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R25	NVP1301-103N	V RESISTOR	10KΩ
R26	QRSA08J-682YN	RESISTOR	6.8KΩ,1/10W
R27	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R28	QRSA08J-822YN	RESISTOR	8.2KΩ,1/10W
R29	NVP1301-103N	V RESISTOR	10KΩ
R30	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R31	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R32	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R33	NRVA62D-392N	RESISTOR	3.9KΩ,1/16W
R34	NRVA62D-113N	RESISTOR	11KΩ,1/16W
R35	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R36	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R37	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R38	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
C1	QETA1EM-337	E CAPACITOR	330μF,25V
C2	QCFA1HZ-473	CAPACITOR	0.047μF,50V
C4	QEK41CM-107	E CAPACITOR	100μF,16V
C5	QER41EM-106	E CAPACITOR	10μF,25V
C6	QER41EM-106	E CAPACITOR	10μF,25V
C8	QCYA1HK-102	CAPACITOR	0.001μF,50V
C9	QCYA1HK-152	CAPACITOR	0.0015μF,50V
C10	QEZ0105-276	E CAPACITOR	27μF
C11	PU57601-156MC	E CAPACITOR	15μF
C12	PU57601-156MC	E CAPACITOR	15μF
C13	QCYA1HK-822	CAPACITOR	0.0082μF,50V
C15	QCYA1HK-822	CAPACITOR	0.0082μF,50V
C16	QCYA1HK-103	CAPACITOR	0.01μF,50V
C17	QFN41HJ-102	M CAPACITOR	0.001μF,50V
C18	QCYA1HK-822	CAPACITOR	0.0082μF,50V
C19	QCYA1HK-102	CAPACITOR	0.001μF,50V
C21	QCYA1HK-152	CAPACITOR	0.0015μF,50V
C22	QEZ0105-276	E CAPACITOR	27μF
C23	PU57601-156MC	E CAPACITOR	15μF
C24	QCYA1HK-102	CAPACITOR	0.001μF,50V
C27	QEZ0105-276	E CAPACITOR	27μF
C28	QEK40JM-227	E CAPACITOR	220μF,6.3V
C29	PU57601-156MC	E CAPACITOR	15μF
L2	PU56181-470	COIL	47μH
L3	YU40601-13	COIL	
L4	YU40601-13	COIL	
L5	PU56181-470	COIL	47μH
L6	PU56181-470	COIL	47μH
L7	PU56181-470	COIL	47μH
T1	YU41235	TRANS	
T2	YU41190	TRANS	
T3	YU41235	TRANS	
BKT1	PRD43842	BRACKET	
CL1	YU40245-05	WIRE CLAMP	
⚠ HS1	PRD44040	HEAT SINK	
SCW1	SPSP3006Z	SCREW	
SCW2	SDST2606Z	SCREW	
SLD1	PU61050	SHIELD COVER	
SLD2	PRS40024	SHIELD CASE	
SLD3	PU61051	SHIELD PLATE	
TP1	PU56008	TEST-PIN, X2(TP1,2)	
TP3	PGZ01015	TEST PIN, X4(TP3-6)	
CN1	PGZ01519-032	CONNECTOR	
⚠ CP1	ICP-F20	CIRCUIT PROTECTOR	
⚠ CP2	ICP-F25	CIRCUIT PROTECTOR	
⚠ CP3	ICP-F20	CIRCUIT PROTECTOR	
⚠ CP4	ICP-F20	CIRCUIT PROTECTOR	
⚠ CP5	ICP-F25	CIRCUIT PROTECTOR	

AUDIO BOARD ASSEMBLY <07>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PRK10109C-04	AUDIO BOARD ASSY	
IC1	NJM2068MD	IC	
IC2	NJM2068MD	IC	
IC3	M5201FP	IC	
IC4	M5201FP	IC	
IC5	NJM2068MD	IC	
IC6	NJM2068MD	IC	
IC7	NJM4556MB	IC	
IC8	NJM2068MD	IC	
IC9	NJM386M	IC	
IC10	M5201FP	IC	
IC11	M5201FP	IC	
IC12	TK15021	IC	
IC13	NJM2068MD	IC	
IC15	JCP0038	IC	
IC16	LA7285M(L1)	IC	
IC17	LA7285M(L1)	IC	
IC18	CXA1102M	IC	
IC19	TC4094BF	IC	
Q1	2SK208(O)	FE TRANSISTOR	
Q2	2SK208(O)	FE TRANSISTOR	
Q5	FMW3	TRANSISTOR	
Q6	FMW3	TRANSISTOR	
Q7	DTA114EU	TRANSISTOR	
Q8	2SA1576(QRS)	TRANSISTOR	
Q9	2SA1576(QRS)	TRANSISTOR	
Q10	2SC4081(QRS)	TRANSISTOR	
Q11	2SC4081(QRS)	TRANSISTOR	
Q13	DTC124EU	TRANSISTOR	
Q14	DTC124EU	TRANSISTOR	
Q15	DTC124EU	TRANSISTOR	
Q16	DTC124EU	TRANSISTOR	
Q17	2SC4081(QRS)	TRANSISTOR	
Q18	DTA114EU	TRANSISTOR	
Q19	DTA114EU	TRANSISTOR	
Q20	2SC4081(QRS)	TRANSISTOR	
Q21	2SC4081(QRS)	TRANSISTOR	
Q22	FMS3	TRANSISTOR	
Q23	FMW3	TRANSISTOR	
Q24	FMW3	TRANSISTOR	
Q25	DTA114EU	TRANSISTOR	
Q26	DTA114EU	TRANSISTOR	
Q27	DTC124TU	TRANSISTOR	
Q28	DTC144EU	TRANSISTOR	
Q29	DTC144EU	TRANSISTOR	
Q30	DTC124EU	TRANSISTOR	
Q31	DTA114EU	TRANSISTOR	
Q32	DTA114EU	TRANSISTOR	
Q33	DTA114EU	TRANSISTOR	
Q34	DTC124EU	TRANSISTOR	
Q35	DTA114EU	TRANSISTOR	
Q36	DTC124EU	TRANSISTOR	
Q37	2SC4081(QRS)	TRANSISTOR	
Q38	DTA114EU	TRANSISTOR	
Q39	FMW3	TRANSISTOR	
Q40	FMW3	TRANSISTOR	
Q41	DTA114EU	TRANSISTOR	
Q42	DTA114EU	TRANSISTOR	
Q43	DTA114EU	TRANSISTOR	
Q44	DTC124EU	TRANSISTOR	
Q46	DTC124EU	TRANSISTOR	
Q47	DTA124EU	TRANSISTOR	
Q48	2SD601A	TRANSISTOR	
Q49	DTA124EU	TRANSISTOR	
Q50	DTC124EU	TRANSISTOR	
Q51	2SC4081(QRS)	TRANSISTOR	
Q52	DTC124EU	TRANSISTOR	
Q53	DTA124EU	TRANSISTOR	
D1	DA204U	DIODE	
D2	DA204U	DIODE	
D3	DA204U	DIODE	
D4	DA204U	DIODE	
D5	DA204U	DIODE	
D6	DA204U	DIODE	
D7	DA204U	DIODE	
D8	DA204U	DIODE	
D9	DAN202U	DIODE	
D10	DA204U	DIODE	
D11	DA204U	DIODE	
D12	DA204U	DIODE	
D13	DA204U	DIODE	
D14	DAP202U	DIODE	
R1	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R2	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R3	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R4	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R5	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R6	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R7	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R8	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R9	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R10	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R11	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R12	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R13	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R14	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R15	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R16	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R17	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R18	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R19	NRSA63J-391N	RESISTOR	390Ω,1/16W
R20	NRSA63J-185N	RESISTOR	1.8MΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R21	NRSA63J-391N	RESISTOR	390Ω,1/16W
R22	NRSA63J-185N	RESISTOR	1.8MΩ,1/16W
R23	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R24	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R25	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R26	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R27	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R28	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R29	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R30	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R31	NRSA63J-560N	RESISTOR	56Ω,1/16W
R32	NRSA63J-560N	RESISTOR	56Ω,1/16W
R33	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R34	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R35	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R36	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R37	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R38	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R39	PGZ01538	V RESISTOR, REC LEVLE(L)	
R40	PGZ01538	V RESISTOR, REC LEVEL(R)	
R41	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R42	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R43	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R44	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R45	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R46	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R47	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R48	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R49	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R50	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R51	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R52	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R53	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R54	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R55	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R56	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R57	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R61	NRVA63D-472N	RESISTOR	4.7KΩ,1/16W
R62	NRSA63J-181N	RESISTOR	180Ω,1/16W
R63	NRVA63D-472N	RESISTOR	4.7KΩ,1/16W
R64	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R65	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R66	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R67	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R68	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R69	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R70	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R71	NRSA63J-331N	RESISTOR	330Ω,1/16W
R72	NRSA63J-334N	RESISTOR	330KΩ,1/16W
R73	NRVA63D-152N	RESISTOR	1.5KΩ,1/16W
R74	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R75	NRVA63D-152N	RESISTOR	1.5KΩ,1/16W
R76	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R77	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R78	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R79	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R81	NRVA63D-472N	RESISTOR	4.7KΩ,1/16W
R82	NRSA63J-181N	RESISTOR	180Ω,1/16W
R83	NRVA63D-472N	RESISTOR	4.7KΩ,1/16W
R84	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R85	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R86	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R87	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R88	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R89	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R90	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R91	NRSA63J-331N	RESISTOR	330Ω,1/16W
R92	NRSA63J-334N	RESISTOR	330KΩ,1/16W
R93	NRVA63D-152N	RESISTOR	1.5KΩ,1/16W
R94	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R95	NRVA63D-152N	RESISTOR	1.5KΩ,1/16W
R96	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R97	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R98	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R99	NRVA63D-153N	RESISTOR	15KΩ,1/16W
R101	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R102	NRSA63J-151N	RESISTOR	150Ω,1/16W
R103	NRSA63J-470N	RESISTOR	47Ω,1/16W
R104	NRSA63J-151N	RESISTOR	150Ω,1/16W
R105	NRSA63J-470N	RESISTOR	47Ω,1/16W
R108	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R109	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R111	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R112	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R113	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R114	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R115	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R116	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R117	PGZ01537	V RESISTOR, MONITOR LEVEL	
R118	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R119	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R120	NVP1415-102N	V RESISTOR, ARARM LEVEL	1KΩ,1/4W
R121	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R123	NRSA63J-100N	RESISTOR	10Ω,1/16W
R124	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R125	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R126	NRSA63J-100N	RESISTOR	10Ω,1/16W
R127	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R128	NVP1415-204N	VR, SAVE-1 LCH EE LEV (GY-X2)	
R129	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R130	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R131	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R133	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R134	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R135	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R136	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R137	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R138	NVP1415-204N	VR, SAVE-1 RCH EE LEV (GY-X2)	
R139	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R140	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R141	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R143	NRSA63J-473N	RESISTOR	47KΩ,1/16W

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#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
R144	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R145	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R146	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R147	NRSA63J-122N	RESISTOR 1.2KΩ,1/16W
R148	NRSA63J-122N	RESISTOR 1.2KΩ,1/16W
R149	NRSA63J-102N	RESISTOR 1KΩ,1/16W
R150	NRSA63J-102N	RESISTOR 1KΩ,1/16W
R151	NRSA63J-472N	RESISTOR 4.7KΩ,1/16W
R152	NVP1415-103N	V RESISTOR, LEVEL METER(L) 10KΩ,1/4W
R153	NRSA63J-472N	RESISTOR 4.7KΩ,1/16W
R154	NVP1415-103N	V RESISTOR, LEVEL METER(R) 10KΩ,1/4W
R155	NRSA63J-102N	RESISTOR 1KΩ,1/16W
R156	NRSA63J-102N	RESISTOR 1KΩ,1/16W
R157	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R158	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R159	NRSA63J-122N	RESISTOR 1.2KΩ,1/16W
R160	NRSA63J-122N	RESISTOR 1.2KΩ,1/16W
R161	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R162	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R163	NRSA63J-821N	RESISTOR 820Ω,1/16W
R164	NRSA63J-122N	RESISTOR 1.2KΩ,1/16W
R165	NRSA63J-331N	RESISTOR 330Ω,1/16W
R166	NRSA63J-223N	RESISTOR 22KΩ,1/16W
R167	NRSA63J-473N	RESISTOR 47KΩ,1/16W
R170	PGZ01809	V RESISTOR, TRACKING VR
R171	NRSA63J-473N	RESISTOR 47KΩ,1/16W
R172	NRSA63J-683N	RESISTOR 68KΩ,1/16W
R173	NRSA63J-473N	RESISTOR 47KΩ,1/16W
R174	NRSA63J-683N	RESISTOR 68KΩ,1/16W
R177	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R178	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R179	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R180	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R181	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R182	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R183	NRSA63J-223N	RESISTOR 22KΩ,1/16W
R184	NRSA63J-223N	RESISTOR 22KΩ,1/16W
R185	NRSA63J-391N	RESISTOR 390Ω,1/16W
R186	NRSA63J-391N	RESISTOR 390Ω,1/16W
R187	NRSA63J-822N	RESISTOR 8.2KΩ,1/16W
R188	NRSA63J-822N	RESISTOR 8.2KΩ,1/16W
R189	NRSA63J-102N	RESISTOR 1KΩ,1/16W
R190	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R191	NRSA63J-101N	RESISTOR 100Ω,1/16W
R192	NRSA63J-102N	RESISTOR 1KΩ,1/16W
R193	NRSA63J-474N	RESISTOR 470KΩ,1/16W
R194	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R195	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R196	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R197	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R198	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R199	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R201	NRSA63J-0R0N	RESISTOR 0Ω,1/16W
R202	NRSA63J-511N	RESISTOR 510Ω,1/16W
R203	NRSA63J-472N	RESISTOR 4.7KΩ,1/16W
R204	NRSA63J-513N	RESISTOR 51KΩ,1/16W
R205	NVP1415-503N	V RESISTOR, FMA PB LEVEL(R) 50KΩ,1/4W
R206	NRSA63J-0R0N	RESISTOR 0Ω,1/16W
R208	NRSA63J-101N	RESISTOR 100Ω,1/16W
R209	NRSA63J-153N	RESISTOR 15KΩ,1/16W
R210	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
R211	NVP1415-502N	V RESISTOR, FMA CARRIER(R) 5KΩ,1/4W
R212	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R213	NRSA63J-182N	RESISTOR 1.8KΩ,1/16W
R214	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
R215	NRSA63J-272N	RESISTOR 2.7KΩ,1/16W
R216	NRSA63J-272N	RESISTOR 2.7KΩ,1/16W
R217	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R218	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R219	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R221	NRSA63J-0R0N	RESISTOR 0Ω,1/16W
R222	NRSA63J-303N	RESISTOR 30KΩ,1/16W
R223	NRSA63J-183N	RESISTOR 18KΩ,1/16W
R224	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R225	NRSA63J-104N	RESISTOR 100KΩ,1/16W
R226	NRSA63J-0R0N	RESISTOR 0Ω,1/16W
R227	NRSA63J-511N	RESISTOR 510Ω,1/16W
R228	NRSA63J-472N	RESISTOR 4.7KΩ,1/16W
R229	NRSA63J-513N	RESISTOR 51KΩ,1/16W
R230	NVP1415-503N	V RESISTOR, FMA PB LEVEL(L) 50KΩ,1/4W
R231	NRSA63J-0R0N	RESISTOR 0Ω,1/16W
R233	NRSA63J-101N	RESISTOR 100Ω,1/16W
R234	NRSA63J-153N	RESISTOR 15KΩ,1/16W
R235	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
R236	NRSA63J-153N	RESISTOR 15KΩ,1/16W
R237	NVP1415-103N	V RESISTOR, FMA CARRIER(L) 10KΩ,1/4W
R238	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R239	NRSA63J-332N	RESISTOR 3.3KΩ,1/16W
R241	NRSA63J-222N	RESISTOR 2.2KΩ,1/16W
R242	NRSA63J-472N	RESISTOR 4.7KΩ,1/16W
R243	NRSA63J-222N	RESISTOR 2.2KΩ,1/16W
R244	NRSA63J-472N	RESISTOR 4.7KΩ,1/16W
R245	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
R246	NRSA63J-682N	RESISTOR 6.8KΩ,1/16W
R247	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
R248	NRSA63J-472N	RESISTOR 4.7KΩ,1/16W
R251	NRSA63J-222N	RESISTOR 2.2KΩ,1/16W
R252	NRSA63J-560N	RESISTOR 56Ω,1/16W
R253	NRSA63J-333N	RESISTOR 33KΩ,1/16W
R254	NVP1415-203N	V RESISTOR, N.AUD REC LEV(L) 20KΩ,1/4W
R255	NRSA63J-333N	RESISTOR 33KΩ,1/16W
R256	NRSA63J-103N	RESISTOR 10KΩ,1/16W
R257	NRSA63J-102N	RESISTOR 1KΩ,1/16W
R258	NRSA63J-473N	RESISTOR 47KΩ,1/16W
R259	NRSA63J-153N	RESISTOR 15KΩ,1/16W
R260	NRSA63J-332N	RESISTOR 3.3KΩ,1/16W
R261	NRSA63J-332N	RESISTOR 3.3KΩ,1/16W
R262	NRSA63J-153N	RESISTOR 15KΩ,1/16W
R263	NRSA63J-393N	RESISTOR 39KΩ,1/16W
R264	NRSA63J-101N	RESISTOR 100Ω,1/16W
R265	NVP1415-102N	V RESISTOR, N.AUD FREQ(L) 1KΩ,1/4W
R266	NRSA63J-334N	RESISTOR 330KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R267	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R268	NRSA63J-820N	RESISTOR	82Ω,1/16W
R269	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R271	NVP1415-103N	V RESISTOR, N.AUD PB LEV(L)	10KΩ,1/4W
R272	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R273	NRSA63J-184N	RESISTOR	180KΩ,1/16W
R274	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R275	NRSA63J-100N	RESISTOR	10Ω,1/16W
R276	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R277	NVP1415-203N	V RESISTOR, N.AUD EE LEV(L)	20KΩ,1/4W
R278	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R279	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R281	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R282	NRSA63J-560N	RESISTOR	56Ω,1/16W
R283	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R284	NVP1415-203N	V RESISTOR, N.AUD REC LEV(R)	20KΩ,1/4W
R285	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R286	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R287	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R288	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R289	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R290	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R291	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R292	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R293	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R294	NRSA63J-101N	RESISTOR	100Ω,1/16W
R295	NVP1415-102N	V RESISTOR, N.AUD FREQ(R)	1KΩ,1/4W
R296	NRSA63J-334N	RESISTOR	330KΩ,1/16W
R297	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R298	NRSA63J-820N	RESISTOR	82Ω,1/16W
R299	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R301	NVP1415-103N	V RESISTOR, N.AUD PB LEV(R)	10KΩ,1/4W
R302	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R303	NRSA63J-184N	RESISTOR	180KΩ,1/16W
R304	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R305	NRSA63J-100N	RESISTOR	10Ω,1/16W
R306	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R307	NVP1415-203N	V RESISTOR, N.AUD EE LEV(R)	20KΩ,1/4W
R308	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R309	NRSA63J-154N	RESISTOR	150KΩ,1/16W
R311	NRSA63J-391N	RESISTOR	390Ω,1/16W
R312	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R313	NRVA63D-433N	RESISTOR	43KΩ,1/16W
R314	NRSA63J-391N	RESISTOR	390Ω,1/16W
R315	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R316	NRSA63J-473N	RESISTOR	47KΩ,1/16W
R317	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R318	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R321	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R322	NRSA63J-682N	RESISTOR	6.8KΩ,1/16W
R323	NRSA63J-4R7N	RESISTOR	4.7Ω,1/16W
R324	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R325	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R326	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R327	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R328	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R329	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R330	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R331	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R332	NVP1415-203N	V RESISTOR, S-VHS R/P FREQ(L)	20KΩ,1/4W
R333	NVP1415-203N	V RESISTOR, S-VHS R/P FREQ(R)	20KΩ,1/4W
R334	NVP1415-503N	V RESISTOR, VHS R/P FREQ(L)	50KΩ,1/4W
R335	NVP1415-503N	V RESISTOR, VHS R/P FREQ(R)	50KΩ,1/4W
R336	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R337	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R338	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R339	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R341	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R342	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R343	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R344	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R345	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R346	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R347	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R349	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R355	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R356	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R357	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C1	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C2	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C3	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C4	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C5	NCS31HJ-100A	CAPACITOR	10PF,50V
C6	NCS31HJ-100A	CAPACITOR	10PF,50V
C7	NCS31HJ-100A	CAPACITOR	10PF,50V
C8	NCS31HJ-100A	CAPACITOR	10PF,50V
C9	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C10	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C11	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C12	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C13	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C14	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C15	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C16	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C17	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C18	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C19	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C20	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C21	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C22	NCB31HK-102A	CAPACITOR	0.001μF,50V
C23	NCB31HK-102A	CAPACITOR	0.001μF,50V
C24	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C25	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C26	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C27	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C28	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C29	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C30	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C31	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V

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#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C51	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C52	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C53	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C54	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C55	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C56	NEH11CM-476NP	E CAPACITOR	47μF,16V
C57	NEN10JM-226NP	E CAPACITOR	22μF,6.3V
C58	NCS31HJ-101A	CAPACITOR	100PF,50V
C59	NCS31HJ-101A	CAPACITOR	100PF,50V
C60	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C61	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C62	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C63	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C64	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C65	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C66	NEH11CM-476NP	E CAPACITOR	47μF,16V
C67	NEN10JM-226NP	E CAPACITOR	22μF,6.3V
C68	NCS31HJ-101A	CAPACITOR	100PF,50V
C69	NCS31HJ-101A	CAPACITOR	100PF,50V
C70	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C71	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C72	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C73	NEH11CM-476NP	E CAPACITOR	47μF,16V
C75	NCS31HJ-101A	CAPACITOR	100PF,50V
C76	NCS31HJ-101A	CAPACITOR	100PF,50V
C77	NCS31HJ-101A	CAPACITOR	100PF,50V
C78	NCS31HJ-101A	CAPACITOR	100PF,50V
C81	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C82	NCS31HJ-100A	CAPACITOR	10PF,50V
C83	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C84	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C85	NCS31HJ-100A	CAPACITOR	10PF,50V
C86	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C87	NEH11CM-476NP	E CAPACITOR	47μF,16V
C89	NEH11CM-106N	E CAPACITOR	10μF,16V
C90	NEH11CM-476NP	E CAPACITOR	47μF,16V
C91	NCB31CK-473A	CAPACITOR	0.047μF,16V
C92	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C93	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C95	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C96	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C97	NCS31HJ-100A	CAPACITOR	10PF,50V
C98	NCS31HJ-100A	CAPACITOR	10PF,50V
C99	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C100	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C101	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C102	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C103	NCS31HJ-100A	CAPACITOR	10PF,50V
C104	NCS31HJ-100A	CAPACITOR	10PF,50V
C105	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C106	NEN11EM-475NZ	NP E CAPACITOR	4.7μF,25V
C107	NEN11EM-475NZ	NP E CAPACITOR	4.7μF,25V
C108	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C109	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C110	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C111	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C112	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C113	NCB31HK-102A	CAPACITOR	0.001μF,50V
C114	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C121	NEH11CM-476NP	E CAPACITOR	47μF,16V
C122	NEH31AM-336NZ	E CAPACITOR	33μF,10V
C123	NEH11CM-476NP	E CAPACITOR	47μF,16V
C124	NEH31AM-336NZ	E CAPACITOR	33μF,10V
C125	NEH11CM-476NP	E CAPACITOR	47μF,16V
C126	NEH11CM-476NP	E CAPACITOR	47μF,16V
C127	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C128	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C151	NCB31CK-473A	CAPACITOR	0.047μF,16V
C152	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C153	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C154	NCB31CK-333A	CAPACITOR	0.033μF,16V
C155	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C156	NEH11CM-106N	E CAPACITOR	10μF,16V
C157	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C158	NCB31EK-103A	CAPACITOR	0.01μF,25V
C159	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C160	NCB31HK-102A	CAPACITOR	0.001μF,50V
C161	NCB31EK-822A	CAPACITOR	0.0082μF,25V
C162	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C163	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C164	NCB31HK-821A	CAPACITOR	820PF,50V
C165	NCB31EK-392A	CAPACITOR	0.0039μF,25V
C166	NEH11CM-106N	E CAPACITOR	10μF,16V
C167	NCB31CK-473A	CAPACITOR	0.047μF,16V
C168	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C169	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C170	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C171	NEH11CM-476NP	E CAPACITOR	47μF,16V
C172	NEE20JM-106RY	TANTAL CAPACITOR	10μF,6.3V
C173	NEE20JM-106RY	TANTAL CAPACITOR	10μF,6.3V
C174	NEE20JM-106RY	TANTAL CAPACITOR	10μF,6.3V
C175	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C176	NCB31EK-103A	CAPACITOR	0.01μF,25V
C177	NCS31HJ-561A	CAPACITOR	560PF,50V
C178	NEH11HM-105NZ	E CAPACITOR	1μF,50V
C179	NCB31CK-333A	CAPACITOR	0.033μF,16V
C180	NCB31CK-473A	CAPACITOR	0.047μF,16V
C181	NEH11CM-226NP	E CAPACITOR	22μF,16V
C182	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C183	NCB31CK-333A	CAPACITOR	0.033μF,16V
C184	NEN10JM-106NZ	E CAPACITOR	10μF,6.3V
C185	NEH11CM-106N	E CAPACITOR	10μF,16V
C186	NEH11HM-225NZ	E CAPACITOR	2.2μF,50V
C187	NCB31EK-103A	CAPACITOR	0.01μF,25V
C188	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C189	NCB31HK-102A	CAPACITOR	0.001μF,50V
C190	NCB31EK-822A	CAPACITOR	0.0082μF,25V
C191	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C192	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C193	NCB31HK-821A	CAPACITOR	820PF,50V
C194	NCB31EK-392A	CAPACITOR	0.0039μF,25V
C195	NCB31EK-103A	CAPACITOR	0.01μF,25V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C196	NCB31EK-103A	CAPACITOR	0.01μF,25V
C201	NEH11CM-476NP	E CAPACITOR	47μF,16V
C202	NCS31HJ-101A	CAPACITOR	100PF,50V
C203	NEH11CM-106N	E CAPACITOR	10μF,16V
C204	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C205	NCB31CK-273A	CAPACITOR	0.027μF,16V
C206	NEH11CM-106N	E CAPACITOR	10μF,16V
C207	NCB31EK-822A	CAPACITOR	0.0082μF,25V
C208	NCB31EK-103A	CAPACITOR	0.01μF,25V
C209	NEH11HM-474NZ	E CAPACITOR	0.47μF,50V
C210	NCB31EK-822A	CAPACITOR	0.0082μF,25V
C211	NCB31HK-272A	CAPACITOR	0.0027μF,50V
C212	NCB31HK-102A	CAPACITOR	0.001μF,50V
C213	NCB31CK-473A	CAPACITOR	0.047μF,16V
C214	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C215	NCB31EK-103A	CAPACITOR	0.01μF,25V
C216	NCB31CK-333A	CAPACITOR	0.033μF,16V
C218	NEH11CM-106N	E CAPACITOR	10μF,16V
C221	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C222	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C223	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C224	QCYA1CK-683	CAPACITOR	0.068μF,16V
C225	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C231	NEE21AM-476RZ	TANTAL CAPACITOR	47μF,10V
C232	NCS31HJ-101A	CAPACITOR	100PF,50V
C233	NEH11CM-106N	E CAPACITOR	10μF,16V
C234	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C235	NCB31CK-273A	CAPACITOR	0.027μF,16V
C236	NEH11CM-106N	E CAPACITOR	10μF,16V
C237	NCB31EK-822A	CAPACITOR	0.0082μF,25V
C238	NCB31EK-103A	CAPACITOR	0.01μF,25V
C239	NEH11HM-474NZ	E CAPACITOR	0.47μF,50V
C240	NCB31EK-822A	CAPACITOR	0.0082μF,25V
C241	NCB31HK-272A	CAPACITOR	0.0027μF,50V
C242	NCB31HK-102A	CAPACITOR	0.001μF,50V
C243	NCB31CK-473A	CAPACITOR	0.047μF,16V
C244	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C245	NCB31EK-103A	CAPACITOR	0.01μF,25V
C246	NCB31CK-333A	CAPACITOR	0.033μF,16V
C248	NEE20JM-106RY	TANTAL CAPACITOR	10μF,6.3V
C249	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C250	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C251	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C252	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C253	NEH11EM-475NZ	E CAPACITOR	4.7μF,25V
C254	QCYA1CK-683	CAPACITOR	0.068μF,16V
C255	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C261	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C262	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C263	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C264	NEE21VM-684RY	TANTAL CAPACITOR	0.68μF,35V
C265	NEE20JM-106RY	TANTAL CAPACITOR	10μF,6.3V
C266	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C267	NEH11EM-336NP	E CAPACITOR	33μF,25V
C268	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C269	NEH10JM-107NP	E CAPACITOR	100μF,6.3V
C270	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C271	NEE21VM-684RY	TANTAL CAPACITOR	0.68μF,35V
C272	NEE20JM-106RY	TANTAL CAPACITOR	10μF,6.3V
C275	NEH10JM-226N	E CAPACITOR	22μF,6.3V
C276	QFZ9011-333	MM CAPACITOR	0.033μF
C277	NCS31HJ-331A	CAPACITOR	330PF,50V
C278	NCB31EK-392A	CAPACITOR	0.0039μF,25V
C279	NEH11EM-106NP	E CAPACITOR	10μF,25V
C280	NCB31EK-103A	CAPACITOR	0.01μF,25V
C281	NCB31EK-103A	CAPACITOR	0.01μF,25V
C282	NCS31HJ-331A	CAPACITOR	330PF,50V
C283	NCS31HJ-331A	CAPACITOR	330PF,50V
C285	NCB31HK-102A	CAPACITOR	0.001μF,50V
C286	NCB31HK-102A	CAPACITOR	0.001μF,50V
C287	NEH10JM-476NP	E CAPACITOR	47μF,6.3V
C288	NEE21CM-225RY	TANTAL CAPACITOR	2.2μF,16V
L1	PELN0840-330MY	COIL	
L2	PELN0840-330MY	COIL	
L3	PELN0840-330MY	COIL	
L4	PELN0840-330MY	COIL	
L11	YU41135-221K	COIL	220μH
L12	YU41135-221K	COIL	220μH
L13	YU41135-221K	COIL	220μH
L14	PU53607-472	COIL	4.7mH
L15	PGZ00917-152	COIL	
L16	PU53607-472	COIL	4.7mH
L17	PGZ00917-152	COIL	
L18	YU41135-221K	COIL	220μH
L19	YU40932-P	OSC COIL	
L20	YU41135-221K	COIL	220μH
LPF1	PU60206	LOW PASS FILTER	
LPF2	PU60206	LOW PASS FILTER	
BPF1	YU41191-P	BAND PASS FILTER(1.4M)	
BPF2	YU41192-P	BAND PASS FILTER(1.8M)	
SW1	PGZ01322	SWITCH, AUDIO INPUT SEL(L)	
SW2	PGZ01776	SWITCH, AUDIO INPUT SEL(R)	
SW3	QSS1A42-L01	SWITCH, AUDIO INPUT LEV(L)	
SW4	QSS1A42-L01	SWITCH, AUDIO INPUT LEV(R)	
SW5	PGZ01322	SWITCH, S-VHS	
SW6	PGZ01322	SWITCH, VIDEO OUT	
SW7	PGZ01322	SWITCH, AEF	
SW8	PGZ01322	SWITCH, AUTO REVIEW	
SW9	PGZ01322	SWITCH, REC LEVEL	
SW10	PGZ01322	SWITCH, DOLBY NR	
SW11	PGZ01793	SWITCH, HI-FI REC	
SW12	PGZ01322	SWITCH, AUDIO OUT	
SW13	PGZ01772	SWITCH, VITC	
SW14	PGZ01772	SWITCH, LTC	
SW16	PGZ01772	SLIDE SWITCH, RUN	

<07><08>

#△	REF No.	PART No.	PART NAME, DESCRIPTION
	SW17	PGZ01249	TACT SWITCH, HOLD
	SW18	PGZ01249	TACT SWITCH, SHIFT
	SW19	PGZ01249	TACT SWITCH, ADVANCE
	SW20	PGZ01249	TACT SWITCH, PRESET
	SW21	NSRA002-L01Z	ROTARY SW, MIC AMP GAIN(L)
	SW22	NSRA002-L01Z	ROTARY SW, MIC AMP GAIN(R)
	SW23	PU54440	SWITCH, LIMITER
	SW24	PGZ01776	SLIDE SWITCH, MONITOR OUT
	VA1	PU49624-2	VARISTOR
	VA2	PU49624-2	VARISTOR
	VA3	PU49624-2	VARISTOR
	VA4	PU49624-2	VARISTOR
	TP1	PGZ01015	TEST PIN, X25(TP1-25,GND1-3)
	CN1	YU40108-24	CONNECTOR
	CN2	PU60566-110	CONNECTOR
	CN3	YU40096-3	CONNECTOR
	CN4	YU40096-3	CONNECTOR
	CN5	YU40096-3	CONNECTOR
	CN6	YU40095-3	CONNECTOR
	CN7	YU40095-3R	CONNECTOR
	CN8	YU40095-2	CONNECTOR
	CN9	YU40771-12	B TO B CONNECTOR
	CN10	YU41356-2-P	CONNECTOR

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DISPLAY BOARD ASSEMBLY <08>

#△	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PGZ01924	LCD BOARD ASSY, PAL
	BL1	PGZ01930	BACK LIGHT ASSY
	LCD1	PGZ01931	LCD
	IC1	UPD75P308GF-R17	IC, PAL
	IC2	TC4021BF	IC
	IC3	S-8054HN-CB-X	IC
	IC4	TC4094BF	IC
	IC5	M51944BML	IC
	Q1	2SD602	TRANSISTOR
	Q2	IMD2	TRANSISTOR
	Q3	IMD2	TRANSISTOR
	Q6	IMD2	TRANSISTOR
	Q9	2SD601A	TRANSISTOR
	Q10	DTA124EK	TRANSISTOR

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	LD1	TLSG208	LE DIODE	
	R2	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R3	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R4	QRSA08J-224YN	RESISTOR	220KΩ,1/10W
	R5	QRSA08J-224YN	RESISTOR	220KΩ,1/10W
	R6	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R7	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R8	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R9	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R10	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R11	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R12	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R13	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R14	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R15	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R16	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R17	QRS188J-751YN	RESISTOR	750Ω,1/8W
	R18	QRS188J-751YN	RESISTOR	750Ω,1/8W
	R19	QRS188J-751YN	RESISTOR	750Ω,1/8W
	R20	QRS188J-751YN	RESISTOR	750Ω,1/8W
	R21	QRS188J-751YN	RESISTOR	750Ω,1/8W
	R22	QRS188J-751YN	RESISTOR	750Ω,1/8W
	R23	QRS188J-751YN	RESISTOR	750Ω,1/8W
	R24	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R25	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R26	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
	R28	QRSA08J-564YN	RESISTOR	560KΩ,1/10W
	R29	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R30	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R31	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R32	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R33	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
	R34	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
	R35	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
	R36	QRSA08J-562YN	RESISTOR	5.6KΩ,1/10W
	R37	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
	R38	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R39	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
	R40	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R41	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
	R42	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R43	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
	R44	QRSA08J-224YN	RESISTOR	220KΩ,1/10W
	R45	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R47	QRSA08J-333YN	RESISTOR	33KΩ,1/10W
	R50	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R51	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R52	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R53	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R54	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R55	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R56	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
	R57	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	R58	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
	R60	QRSA08J-104YN	RESISTOR	100KΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R62	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R63	QRSA08J-474YN	RESISTOR	470KΩ,1/10W
R64	QRSA08J-823YN	RESISTOR	82KΩ,1/10W
R66	QRSA08J-0R0Y	RESISTOR, JP2 (PAL)	0Ω,1/10W
C1	PGZ01933-476	E CAPACITOR	-40μF
C2	QCYA1HK-223	CAPACITOR	0.022μF,50V
C3	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C4	PGZ01934-105	E CAPACITOR	-1PF
C5	QCTA1CH-100	CAPACITOR	10PF,16V
C6	QCTA1CH-330	CAPACITOR	33PF,16V
C7	QCTA1CH-100	CAPACITOR	10PF,16V
C8	QCTA1CH-220	CAPACITOR	22PF,16V
C9	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C10	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C11	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C12	PGZ01935-226	E CAPACITOR	0.00-2μF
L1	YU40500-221KZ	COIL	220μH
X1	PGZ01925	CRYSTAL RESONATOR	
X2	PGZ01926	CRYSTAL RESONATOR	
SW1	PGZ01852	TACT SWITCH, RESET	
SW2	PGZ01852	TACT SWITCH, SELECT	
SW3	PGZ01927-008	DIP SWITCH	
SW9	PGZ01322	SWITCH, LIGHT	
SW10	PGZ01776	SLIDE SWITCH, UB/TC/COUNTER	
CN1	PGZ01932-018Z	CONNECTOR	
CN2	PGZ01715-050	CONNECTOR	

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MOTHER BOARD ASSEMBLY <10>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	PRK20165A-05	MOTHER BOARD ASSY
SLD1	PRD44142	INSULATOR
WR1	PGW0204-080100	FLAT WIRE
WR2	PGZ01794-01-01	FLAT WIRE
WR3	PGW0208-100240	FLAT WIRE
CN1	PGZ01713-100	HALF PITCH CONNECTOR
CN2	PGZ01713-32	HALF PITCH CONNECTOR
CN3	PGZ01720-30	HINGE CONNECTOR
CN4	PU59973-14	CONNECTOR
CN5	YU40096-2	CONNECTOR
CN6	YU40771-20	B TO B CONNECTOR
CN7	YU40771-20	B TO B CONNECTOR
CN8	YU40105-20	B TO B CONNECTOR
CN9	PU58844-4	CONNECTOR
CN10	PGZ01787-10	CONNECTOR
CN11	PGZ01787-18	CONNECTOR
CN12	YU40670-24	CONNECTOR
CN13	PU59973-20	CONNECTOR

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P/R JUNC BOARD ASSEMBLY <11>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PRK20247A-01	PRE/REC JUNC BOARD ASSY	
Q1	DTC124EU	TRANSISTOR	
Q2	DTA124EU	TRANSISTOR	
Q3	DTA124EU	TRANSISTOR	
Q4	2SC4081(QRS)	TRANSISTOR	
Q5	2SC4097(QR)	TRANSISTOR	
Q6	2SC4081(QRS)	TRANSISTOR	
R1	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R2	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
R3	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R4	NRSA63J-4R7N	RESISTOR	4.7Ω,1/16W
R5	NRSA63J-393N	RESISTOR	39KΩ,1/16W
R6	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R7	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R8	NRSA63J-471N	RESISTOR	470Ω,1/16W
R9	NRSA63J-101N	RESISTOR	100Ω,1/16W
C1	NEE21EM-105RY	TANTAL CAPACITOR	1μF,25V
C2	QFZ9011-333	MM CAPACITOR	0.033μF
C3	NCS31HJ-561A	CAPACITOR	560PF,50V
C4	NCB31EK-392A	CAPACITOR	0.0039μF,25V
C5	NEH11EM-106NP	E CAPACITOR	10μF,25V
C7	QFN41HJ-104	M CAPACITOR	0.1μF,50V
C8	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C9	QFP42AJ-562	PP CAPACITOR	0.0056μF,100V
L1	YU40932-P	OSC COIL	
L2	PU58201-101J	COIL	100μH
L3	PU54710-822	COIL	8.2mH
WR1	PGW0206-120110	FLAT WIRE	
TP1	PU54983	TEST PIN, X5(TP1-5)	
CN1	YU40101-20	CONNECTOR	
CN2	PGZ01932-011Z	CONNECTOR	
CN3	YU40095-9	CONNECTOR	
CN4	YU40095-2R	CONNECTOR	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
CN5	YU40095-2	CONNECTOR	

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POWER CTL BOARD ASSEMBLY <14>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PRK20249B	POWER CTL BOARD ASSY	
Q1	DTA114WK	TRANSISTOR	
Q2	DTC114WK	TRANSISTOR	
Q3	2SD601A	TRANSISTOR	
Q4	DTC143XK	TRANSISTOR	
Q5	DTA114TK	TRANSISTOR	
Q6	2SD601A	TRANSISTOR	
Q7	DTC114WK	TRANSISTOR	
D1	DAN202K	DIODE	
D2	DAN202K	DIODE	
D3	RD10EB1	ZENER DIODE	
D5	DAN202K	DIODE	
D6	ERA81-004-F	DIODE	
D7	RD10EB2	ZENER DIODE	
D8	DAN202K	DIODE	
R1	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R2	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R3	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R4	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
R5	QRSA08J-473YN	RESISTOR	47KΩ,1/10W
B6	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
C1	NEE20JM-475RY	TANTAL CAPACITOR	4.7μF,6.3V
C2	NEE21DM-475RY	TANTAL CAPACITOR	4.7μF,20V
L1	PGZ00643	COIL	
⚠ L2	EXC-EMT102BC	N FILTER	
RY1	PGZ01743	RELAY	
CL1	PU55379	MINI CLAMP, X4	
CN1	PU58844-4	CONNECTOR	
CN2	PU58844-4	CONNECTOR	
CN3	PGZ00652-002	CONNECTOR	
CN5	PGZ00651-004	CONNECTOR	
⚠ CP1	ICP-F10	CIRCUIT PROTECTOR	
⚠ CP2	ICP-F10	CIRCUIT PROTECTOR	

- POWER CTL SUB BOARD ASSY -

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PRK20261A	POWER CTL SUB BOARD ASSY	
Q1	2SC4081(QRS)	TRANSISTOR	
Q2	2SC4081(QRS)	TRANSISTOR	
Q3	2SK621	FE TRANSISTOR	
D4	MA742	DIODE	
R1	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R2	NRSA63J-155N	RESISTOR	1.5MΩ,1/16W
R3	NRSA63J-155N	RESISTOR	1.5MΩ,1/16W
R4	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R6	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C1	QCYA1EK-104	CAPACITOR	0.1μF,25V
C2	NEE21DM-225RY	TANTAL CAPACITOR	2.2μF,20V

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CONNECTOR BOARD ASSEMBLY <15>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PRK20253A	CONNECTOR BOARD ASSY	
B2	QRSA08J-0R0Y	RESISTOR, X4	0Ω,1/10W
SW1	PGZ01785	SLIDE SWITCH, VIDEO OUT SEL	
JA3	PGZ01671	PIN JACK, AUDIO CH1	
JA4	PGZ01671	PIN JACK, AUDIO CH2	
WR1	PGW0206-070140	FLAT WIRE	
CN1	YU40108-14	CONNECTOR	

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50 PIN BOARD ASSEMBLY <16>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PRK20180A-01	50PIN BOARD ASSY	
WR1	PGZ01795	FFC WIRE	

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
CN1	PGZ01759	50P CONNECTOR	
CN2	YU40108-20	CONNECTOR	
CN3	PU58844-104	CONNECTOR	

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MODE SENESOR BOARD <17>

PWB	PU56617-1-2	MODE SENSOR BOARD	
Q1	PT431F	PHOTO TRANSISTOR	
Q2	PT431F	PHOTO TRANSISTOR	
D1	GL430	EMITTING DIODE	
D2	GL430	EMITTING DIODE	
R1	QRD161J-222	RESISTOR	2.2KΩ,1/6W
BKT1	PQ30978	MODE SENSOR BRACKET	

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OPERATION BOARD ASSEMBLY <18>

PWBA	PRK20173A-06	OPERATION BOARD ASSY	
IC1	TC4094BF	IC	
IC2	TC4094BF	IC	
Q1	DTC124EK	TRANSISTOR	
Q2	DTC124EK	TRANSISTOR	
Q3	DTC124EK	TRANSISTOR	
Q4	DTC124EK	TRANSISTOR	
Q5	DTC124EK	TRANSISTOR	
Q6	DTC124EK	TRANSISTOR	
Q7	DTC124EK	TRANSISTOR	
Q8	DTC124EK	TRANSISTOR	
Q9	DTC124EK	TRANSISTOR	
LD1	SLM-13VWF-X	LE DIODE	
LD2	SLM-13VWF-X	LE DIODE	
LD3	SLM-13VWF-X	LE DIODE	
LD4	SLM-13VWF-X	LE DIODE	
LD5	SLM-13VWF-X	LE DIODE	
LD6	SLM-13VWF-X	LE DIODE	
LD7	SLM-13VWF-X	LE DIODE	
LD8	SLM-13VWF-X	LE DIODE	
LD9	GL5HD60	LE DIODE	
#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R1	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R2	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R3	QRSA08J-332YN	RESISTOR	3.3KΩ,1/10W
R4	QRSA08J-472YN	RESISTOR	4.7KΩ,1/10W
R5	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R6	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R7	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R8	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R9	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R10	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R11	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R12	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R13	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R14	QRSA08J-182YN	RESISTOR	1.8KΩ,1/10W
R15	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R16	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
C1	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C2	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C3	QCFA1EZ-104	CAPACITOR	0.1μF,25V
SW1	PGZ01249	TACT SWITCH, STOP	
	or PGZ01852	TACT SWITCH	
SW2	PGZ01249	TACT SWITCH, REW	
	or PGZ01852	TACT SWITCH	
SW3	PGZ01249	TACT SWITCH, FF	
	or PGZ01852	TACT SWITCH	
SW4	PGZ01249	TACT SWITCH, PLAY	
	or PGZ01852	TACT SWITCH	
SW5	PGZ01249	TACT SWITCH, PAUSE/STILL	
	or PGZ01852	TACT SWITCH	
SW6	PGZ01249	TACT SWITCH, EJECT	
	or PGZ01852	TACT SWITCH	
SW7	PGZ01249	TACT SWITCH, REC/INSERT	
	or PGZ01852	TACT SWITCH	
SW8	PGZ01775	SLIDE SWITCH, TALLY	
SW9	PGZ01810	PUSH SWITCH, OPERATE	
SPC1	PU50633-3	LED SPACER	
WR1	PGW0206-090100	FLAT WIRE	
CN1	YU40670-10	CONNECTOR	

****

MDA BOARD ASSEMBLY <19>

PWBA	PRK20178A1-01	MDA BOARD ASSY	
IC1	BA6452F	IC	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	D1	DAN202K	DIODE	
	R1	QRSA08J-152YN	RESISTOR	1.5KΩ,1/10W
	R2	QRSA08J-154YN	RESISTOR	150KΩ,1/10W
	R3	QRSA08J-223YN	RESISTOR	22KΩ,1/10W
	R4	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
	R5	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R6	QRSA08J-2R2YN	RESISTOR	2.2Ω,1/10W
	R7	QRSA08J-2R2YN	RESISTOR	2.2Ω,1/10W
	R8	QRSA08J-2R2YN	RESISTOR	2.2Ω,1/10W
⚠	R9	QRG125J-R68AR	MF RESISTOR	0.68Ω,1/2W
	R10	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
	C1	QCY81CK-224	CAPACITOR	0.22μF,16V
	C2	QCSA1HJ-471	CAPACITOR	470PF,50V
	C3	QCY81CK-224	CAPACITOR	0.22μF,16V
	C4	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C5	NEE21AM-106RY	TANTAL CAPACITOR	10μF,10V
	C6	NEE21AM-106RY	TANTAL CAPACITOR	10μF,10V
	C7	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C8	NEE21AM-106RY	TANTAL CAPACITOR	10μF,10V
	C9	NEE21AM-106RY	TANTAL CAPACITOR	10μF,10V
	C10	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C11	NEE21AM-106RY	TANTAL CAPACITOR	10μF,10V
	WR1	PGW0206-040100	FLAT WIRE	
	CN1	PU59973-10	CONNECTOR	
	CN2	YU40095-2	CONNECTOR	
	CN3	YU40095-15	CONNECTOR	
	CN1	PU59973-20	CONNECTOR	
	CN2	YU40095-7	CONNECTOR	
	CN3	YU40095-2	CONNECTOR	
	CN4	YU40095-2R	CONNECTOR	
	CN5	YU40095-2B	CONNECTOR	
	CN6	YU40095-2Y	CONNECTOR	
	CN7	YU40095-2B	CONNECTOR	
	CN8	YU40095-2Y	CONNECTOR	
	CN9	YU40095-3R	CONNECTOR	
	CN10	YU40095-4	CONNECTOR	

****

MECHA IF BOARD ASSEMBLY <20>

PWBA	PRK20178A2-01	MECHA IF BOARD ASSY	
IC1	GP2L09BC	PHOTO SENSOR	
D1	DA204U	DIODE	
R1	QRSA08J-680YN	RESISTOR	68Ω,1/10W
R2	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R3	QRSA08J-471YN	RESISTOR	470Ω,1/10W
C1	QEPA1HM-105	E CAPACITOR	1μF,50V
HD1	YQ30060-1-2	TU.SENSOR HOLDER	

****

MECHA JUNC BOARD ASSEMBLY <21>

PWBA	PRK20172A-02	MECHA JUNCTION BOARD ASSY
SPC1	PRD30030-113	SPACER
WR1	PGW0206-040200	FLAT WIRE
CN1	YU40773-20	CONNECTOR
CN2	YU40773-20	CONNECTOR
CN3	PU59973-10	CONNECTOR
CN4	YU40108-10	CONNECTOR
CN5	YU40108-20	CONNECTOR
CN6	YU40095-2	CONNECTOR
CN8	YU40096-2	CONNECTOR

****

END SENSOR BOARD <22>

PWBA	PRK20178A4-03	END SENSOR BOARD ASSY	
Q1	PN268VI	PHOTO TRANSISTOR	
C1	QCVC1CM-103	CAPACITOR	0.01μF,16V

****

START SENSOR BOARD <23>

PWBA	PRK20178A3-02	START SENSOR BOARD ASSY
Q1	TPS605	PHOTO TRANSISTOR

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C1	QCVC1CN-103	CAPACITOR	0.01μF,16V

****

MDA JUNC BOARD ASSEMBLY <24>

PWBA	PRK20248A	MDA JUNC BOARD ASSY
CN1	YU40096-15	CONNECTOR
CN2	YU40095-15	CONNECTOR

****

POWER SW BOARD ASSEMBLY <25>

PWBA	PRK30097A	POWER SW BOARD ASSY
SW1	PGZ00597	MAIN SWITCH

****

A/C HEAD BOARD <26>

PWBA	PRK30096A	A/C HEAD BOARD ASSY
CN1	YU40095-6	CONNECTOR
CN2	YU40095-2	CONNECTOR

****

REEL SENSOR BOARD <35>

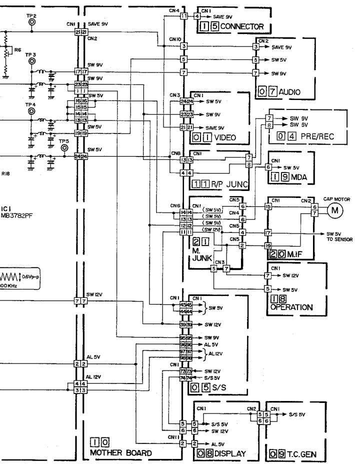
PWB	PU58141	REEL SENSOR BOARD
PHS1	GP2L04BC	PHOTO SENSOR
SCW1	HPSF2060Z	SCREW

- **Operational status of VTR and video camera which are docked as one set**

Note: When the BR-S422E and GY-X2E video camera are docked with each other, power on/off status of respective units is different from each other in the POWER SAVE mode.

Camera's OPERATE switch setting	Camera's power status	Power supply to BR-S422E	VTR of GY-X2E
ON	ON	ON	ON
SAVE	ON	OFF	ON (EE only)
OFF	OFF	OFF	OFF

Table 7-1-1


TP2
TP3
TP4
TP5
R6
R18
IC1
MB3782PF
0.6Vp-p
00KHz
CN1
CN2
SAVE 9V
SW 9V
SW 5V
SW 12V
AL 5V
AL 12V
CN4
CN10
CN3
CN8
CN6
CN11
15 CONNECTOR
07 AUDIO
01 VIDEO
04 PRE/REC
11 R/P JUNC
19 MDA
21 M. JUNK
CN4
CN5
CN3
20 M.IF
CAP MOTOR
M
SW 5V TO SENSOR
18 OPERATION
05 S/S
S/S 5V
08 DISPLAY
09 T.C.GEN
10 MOTHER BOARD

supply circuit

'he POWER CTL board switches between power inputs from
he DC IN and BATT IN connectors.

1 the BR-S411E power input is switched by the diode,
owever, it has the following disadvantages.
) High rate of power consumption (1 W approx. because of
voltage loss made by the diode).
) Earlier low battery indication than its real life due to the
voltage drop by a diode.

he BR-S422E improves those disadvantages by incorporat-
ng the latching type relay for switching power supply. This
witching system maintains the switching mode that was
nce set by current flow in the internal coil of the relay with-
ut further current flow.

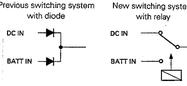


Fig. 7-1-3

he switching operation of the relay system will be described
elow. First, RY1 has two switches which are alternately
urned on and off to switch the power supply without fail.

/hen power is supplied through the DC IN, the emitter and
ie base of the digital transistor Q1 are supplied with 12 V
ower. However, the base current flows through D5 and D4
respective circuits (mainly to capacitors) of the VTR sec-
on. Therefore, the potential of the base does not turn to H
vel immediately after the power supply, but it has L level
r a moment when current flows to capacitors of respec-
ve circuits, and Q1 is turned on in this short period. Conse-
uently, Q2 is turned on and current flows through the coil
the relay to switch the power line to the DC IN.

n the other hand, voltage supplied from the DC IN flows
a D7 to Q4 to turn it on while Q3 is accordingly turned off
prohibit operation of the switch for the BATT IN side. Q4
a transistor to give priority to the DC IN line.

econdly, when power is supplied through the BATT IN, Q4
oes not turn on while Q5 and Q3 are turned on to switch
e relay to the BATT IN side.

ie POWER CTL SUB board functions as the free-running
ultivibrator, and it constantly outputs the pulse shown in
g. 7-1-4 from the gate of Q3. This pulse is supplied to D5
turn on Q1 and Q5 on the POWER CTL board every two
conds in order to supply current in the relay coil. This
nction is prepared for maintaining normal switch operations
the assumption of the worst case such as a strong chock
given to the VTR and the relay switch resultingly falls in
or contact. However, the relay is highly reliable to shock
d any abnormal switching owing to poor contact cannot
expected in usual use.

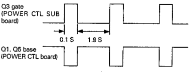


Fig. 7-1-4 RELAY ON CTL pulse

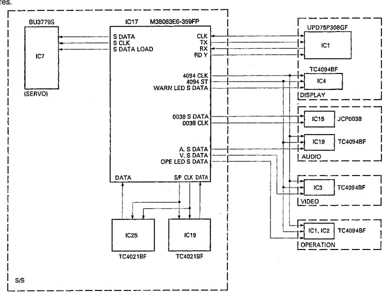
The following explains about the case that power is supplied to the DC IN during active power supply from the BATT IN. In that event, Q4 is turned on while Q3 is turned off, however, the relay is maintained in the BATT IN side and it will be switched to the DC IN side when Q1 is turned on by POWER ON CTL pulse. In another case that power is supplied both to the DC IN and BATT IN, disconnection of the DC IN turns off Q4 and D4's cathode voltage drops down to 0 V. However, this voltage drop is not figured in a straight line but in a slow curve to 0 V. The beginning of voltage drop is detected by the base of Q5 together with functions of D4 and D5 and Q5 momentarily turns on to switch the relay to the BATT IN side.

7.2 SYSCON/SERVO CIRCUIT

7.2.1 System control section

1. General

This model has two CPUs in the syscon circuit of the S/S board and the DISPLAY board (IC17 in the former and IC1 in the latter). Their controls of respective boards are serially operated in consideration of the expansibility and reduction of wires.



BU3779S
IC7
(SERVO)
IC17 M38063E6-359FP
S DATA
S CLK
S DATA LOAD
CLK
TX
RX
RD Y
4094 CLK
4094 ST
WARN LED S DATA
0038 S DATA
0038 CLK
A. S DATA
V. S DATA
OPE LED S DATA
DATA
S/P CLK DATA
IC25
TC4021BF
IC19
TC4021BF
S/S
UPD75P308GF
IC1
TC4094BF
IC4
DISPLAY
IC15
JCP0038
IC19
TC4094BF
AUDIO
IC3
TC4094BF
VIDEO
IC1, IC2
TC4094BF
OPERATION

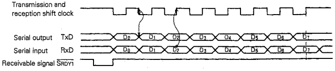
Fig. 7-2-1

2. Syscon CPU

IC17 is an 8-bit single chip microcomputer, which manages and controls VTR mode by means of its output ports.

IC1 on the DISPLAY board is a 4-bit single chip microcomputer, which controls time codes for the display indications by transmitting and receiving signals to/from the syscon CPU synchronizing with the clock.

Transmission and reception timing is shown in Fig. 7-2-2 while pin functions of the syscon CPU are shown in Table 7-2-1.



Transmission and reception shift clock
Serial output TxD
Serial input RxD
Receivable signal $\overline{\mathrm{SRDY1}}$
D0
D1
D2
D3
D4
D5
D6
D7

Fig. 7-2-2 Serial transmission and reception timing

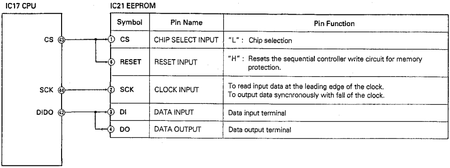
- Syscon CPU pin functions

Pin No.	IN/OUT	NAME	DESCRIPTION
1	IN	B	Detection of remaining batery-operated time. BATT WARNING at 10.95 V DC.
2	IN	2.5/5V	Not used in BR-S422 Discrimination between STBY and SAVE1 modes of GY-X2 camera
3	IN	CAM ON/STBY	Not used
4	IN	END SENSOR	End sensor input detected : H
5	IN	START SENSOR	Start sensor input detected : H
6	IN	TU REEL FG	TU REEL FG input
7	IN	SUP REEL FG	SUP REEL FG input
8	IN	LCD RDY	For module communication control of display Microprocessor requests data to display : H
9		LCD CLK	CLOCK
10	IN	LCD TX	TRANS – On detecting L level of RDY signal, S/S transmits/receives
11	OUT	LCD RX	RECEIVE data to/from display synchronizing with CLK pulse.
12			Not used
13	OUT	CAP DRV	For driving capstan motor. In modes without servo : DC voltage output (FF, REW)
14	OUT	A TONE	ALARM TONE pulse output
15	IN	CAP FG	CAPSTAN FG input
16		CFP IN	Not used
17	IN	OPE COVER OPEN	Detection of operation cover status. Open : H
18	IN	CAMERA ON	Detection of camera ON/OFF status. ON : L
19	IN	F. SERVO CTL	In REC only. When FRAME SERVO is well-timed : H
20		(Prohibited)	
21	OUT	POWER ON CTL	For display. Control of S/S 5 V and SW 12 V powers.
22	OUT	VTR STATUS	VTR STATUS data output to camera
23	IN	CAMERA COM	Not used. Serial command from camera in GY-X2.
24	IN	PB CTL	PB CTL pulse input
25	IN	DFF	DRUM FF input
26		CNV	GND
27	IN	RESET	RESET input for microprocessor
28		REC OUT	Not used
29	OUT	FULL-E	Full erase ON/OFF control
30		X IN	4.9 MHz oscillation block
31		X OUT	
32		Vss	GND
33	OUT	POWER ON CTL	Not used
34		POWER OFF CTL	Not used
35	OUT	OPE LED S DATA	Serial data output for operation LED
36	OUT	WARN LED S DATA	Serial data output for warning LED
37	IN	DATA IN	Serial data input from TC4021 (IC25)
38	OUT	4021 CLK	CLOCK output to control TC4021 (IC19, IC25)
39	OUT	4021 S/P	Control signal output for TC4021 (IC19, IC25)
40	IN	SW DATA	Serial data input from TC4021 (IC19)
41	IN	JIG	Input port for FULL REPEAT RUNNING mode. (PLAY mode only) Grounding TP7 enters the set in the RUNNING mode.
42	IN/OUT	D I/O	Data input/output
43	OUT	CS	CHIP SELECT output – for EEP ROM control
44	OUT	EEP CLK	CLOCK output
45	OUT	MOTOR CTL	For control of mode motor (REV)
46	OUT	MOTOR CTL	For control of mode motor (FWD)
47	OUT	0038 CLK	CLOCK OUTPUT for control of JCP0038 (IC15) of AUDIO board
48	OUT	0038 S DATA	DATA OUTPUT for control of JCP0038 (IC15) of AUDIO board
49	OUT	4094 STB	Control signal output for output booster ICs (TC4094) of AUDIO,
50	OUT	4094 CLK	VIDEO, DISPLAY, OPERATION boards

Pin No.	IN/OUT	NAME	DESCRIPTION
51	OUT	VIDEO REC	VIDEO CTL signal. In REC mode : H
52	OUT	VIDEO PB	" In PB mode : H
53	OUT	V. REC MUTE	" In REC mode : L
54	OUT	VIDEO S DATA	Serial data output for control of IC (TC4094) of VIDEO board
55	OUT	POWER ON CTL	Power ON/OFF control for SW system
56	OUT	STOP CTL	Control of REC WARNING signal to be sent to camera section
57	OUT	EE (H)	In EE picture output : H
58	OUT	REC WARN	Control of "REC WARNING" (pin 49) of 50-pin output In REC mode : 5 V, In REC PAUSE mode : 2.5 V, In other modes : 0 V 5 V and 2.5 V pulses output when warning happens in REC mode.
59	OUT	BATT WARN	Pulse output in WARNING mode
60	OUT	FLY ON	Flying Erase head control
61	OUT	YNR	Pulse output synchronizing with D. FF in PB mode
62	OUT	ZFE CTL	Control of Zero Frame Editing
63	OUT	A S DATA	Serial data output to control TC4094 of AUDIO board
64	OUT	A REC MUTE	FM audio control signal. In REC mode : L
65	OUT	CAP REV	Capstan rotation direction indication. In REV mode : H
66	OUT	DRUM ON	Drum rotation control
67	OUT	S DATA	Serial data output to control IC (BU3779S) of SERVO board
68	OUT	SERVO DATA LOAD	Control signal output for IC (BU3779S) of SERVO board
69	OUT	PB CTL DUTY	Control of VISS write-in. In Writing : H
70	OUT	S CLK	Serial clock output to control IC (BU3779S) of SERVO board
71	OUT	S MODE	Servo ON/OFF output. When Servo ON : L
72	OUT	CAP POWER UP	When capstan gain goes up : H
73	IN	Vcc	+5 V DC
74	IN	VREF	A/D converter power supply
75		AVss	GND
76	IN	AUDIO R	Signal input for audio level meter (R-ch)
77	IN	AUDIO L	Signal input for audio level meter (L-ch)
78	IN	SW 5 V CK	For SW 5 V check
79	IN	KEY B	Operation key input port. REC/INSERT
80	IN	KEY A	Operation key input port. STOP, REW, FF, PLAY, STILL, EJECT.

Table 7-2-1 System CPU pin function

3. EEPROM (M6M80011AP)


IC17 CPU
IC21 EEPROM
CS ㊸
SCK ㊹
DIDO ㊷
①
⑥
②
③
④

Symbol	Pin Name	Pin Function
CS	CHIP SELECT INPUT	"L" : Chip selection
RESET	RESET INPUT	"H" : Resets the sequential controller write circuit for memory protection.
SCK	CLOCK INPUT	To read input data at the leading edge of the clock. To output data syncrnonously with fall of the clock.
DI	DATA INPUT	Data input terminal
DO	DATA OUTPUT	Data output terminal

Fig. 7-2-3 IC21 pin functions

- **Outline of IC21 functions**

IC21 is a 1024-bit (16 bits × 64 words) CMOS EEPROM (Electrically Erasable and Programmable ROM) which is capable of electrically writing and erasing data.

This IC which is a clock synchronous serial input and output type records total operation hours of the drum rotation and reads in data at the leading edge of the clock and outputs data synchronously with the fall of the clock.

Each data is divided at a unit of 8 bits, and the first 8-bits unit is used for mode, the second 8-bits is for address and the rest composed of 16 bits is input or output data. The mode can be specified in five ways of WRITE, READ, WRITE ENABLE, WRITE INHIBIT, and STATUS OUTPUT.

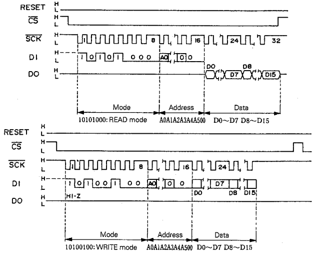
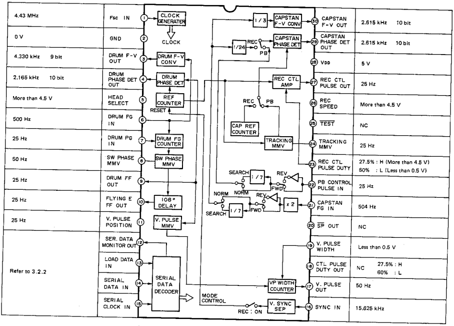

RESET
CS
SCK
DI
DO
H
L
8
16
24
32
1 0 1 0 1 0 0 0
A0
0
D0
D8
D7
D15
Mode
Address
Data
10101000: READ mode
A0A1A2A3A4A500
D0~D7 D8~D15
RESET
CS
SCK
DI
DO
1 0 1 0 0 1 0 0
HI-Z
Mode
Address
Data
10100100: WRITE mode
A0A1A2A3A4A500
D0~D7 D8~D15

Fig. 7-2-4 READ and WRITE modes timing charts

7.2.2 Servo circuit

1. Block diagram and pin functions Of IC7 (BU3779S)


CLOCK GENERATER
CLOCK
DRUM F-V CONV
DRUM PHASE DET
REF COUNTER
RESET
DRUM FG COUNTER
SW PHASE MMV
108° DELAY
V. PULSE MMV
SERIAL DATA DECODER
MODE CONTROL
1/3
CAPSTAN F-V CONV
1/24
REC
PB
CAPSTAN PHASE DET
REC CTL AMP
REC
PB
CAP REF COUNTER
TRACKING MMV
SEARCH
1/7
REV
FWD
NORM
NORM
REV
x 2
SEARCH
1/7
FWD
VP WIDTH COUNTER
V. SYNC SEP
REC : ON

		Pin
4.43 MHz	Fsc IN	1
0 V	GND	2
4.330 kHz 9 bit	DRUM F-V OUT	3
2.165 kHz 10 bit	DRUM PHASE DET OUT	4
More than 4.5 V	HEAD SELECT	5
500 Hz	DRUM FG IN	6
25 Hz	DRUM PG IN	7
50 Hz	SW PHASE MMV	8
25 Hz	DRUM FF OUT	9
25 Hz	FLYING E FF OUT	10
25 Hz	V. PULSE POSITION	11
Refer to 3.2.2	SER. DATA MONITOR OUT	12
	LOAD DATA IN	13
	SERIAL DATA IN	14
	SERIAL CLOCK IN	15

Pin		
30	CAPSTAN F-V OUT	2.615 kHz 10 bit
29	CAPSTAN PHASE DET OUT	2.615 kHz 10 bit
28	VDD	5 V
27	REC CTL PULSE OUT	25 Hz
26	REC SPEED	More than 4.5 V
25	$\overline{\text{TEST}}$	NC
24	TRACKING MMV	25 Hz
23	REC CTL PULSE DUTY	27.5% : H (More than 4.5 V) 60% : L (Less than 0.5 V)
22	PB CONTROL PULSE IN	25 Hz
21	CAPSTAN FG IN	504 Hz
20	$\overline{\text{SP}}$ OUT	NC
19	V. PULSE WIDTH	Less than 0.5 V
18	CTL PULSE DUTY OUT	NC 27.5% : H 60% : L
17	V. PULSE OUT	50 Hz
16	SYNC IN	15.625 kHz

Fig. 7-2-5 Block diagram and pin functions IC7

2. Servo timing chart and data table

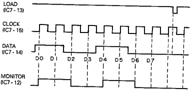

LOAD
(IC7 - 13)
CLOCK
(IC7 - 15)
DATA
(IC7 - 14)
D0
D1
D2
D3
D4
D5
D6
D7
MONITOR
(IC7 - 12)

Fig. 7-2-6 Serial data transfer timing chart

Mode	D0	D1	D2	D3	D4	D5	D6	D7
REC	1	1	0	0	X	0	0	0
ASB	1	0	0	0	X	0	0	0
INST	0	1	0	0	X	0	0	0
PB	0	0	0	0	X	0	0	0
REV PB	0	0	1	0	X	1	0	1
SEARCH FWD	0	0	0	1	X	1	1	1
SEARCH REV	0	0	1	1	X	1	1	1

Table 7-2-2 Serial data

Function	Condition & Cause
DRUM PHASE OUT FIX (PWM DUTY: Fixed 50% in cycle)	1. DRUM FG is out of the specified frequency ± 5%, approx. 2. In SEARCH, STILL, REV PB
CAP PHASE OUT FIX (PWM DUTY: Fixed 50% in cycle)	1. DRUM FG is out of ± 1.0% tolerance of the specified frequency for the NOR operation. (CAP FV OUT: 'H' at this time) 2. CAP FG is out of the specified frequency ± 5%, approx. 3. Dropout of CTL PULSE (other than in REC) 4. In FF/REW

Table 7-2-3 Special functions

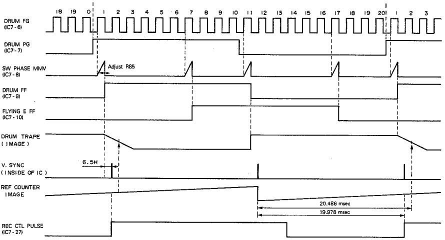

18 19 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 1 2 3
DRUM FG
(IC7 - 6)
DRUM PG
(IC7 - 7)
SW PHASE MMV
(IC7 - 8)
Adjust R85
DRUM FF
(IC7 - 9)
FLYING E FF
(IC7 - 10)
DRUM TRAPE
(IMAGE)
6.5H
V. SYNC
(INSIDE OF IC)
REF COUNTER
IMAGE
20.486 msec
19.978 msec
REC CTL PULSE
(IC7 - 27)

Fig. 7-2-7 Drum servo timing chart

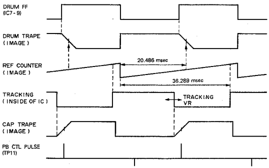
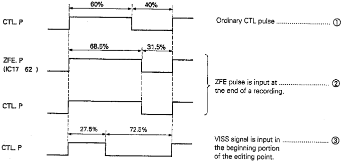

DRUM FF
(IC7 - 9)
DRUM TRAPE
(IMAGE)
REF COUNTER
(IMAGE)
20.486 msec
36.289 msec
TRACKING
(INSIDE OF IC)
TRACKING
VR
CAP TRAPE
(IMAGE)
PB CTL PULSE
(TP11)

Fig. 7-2-8 Playback servo ttiming chart

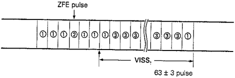
3. Zero frame editing

In this model the duty of the CTL pulse is controlled for smooth splicing of pictures in the zero frame editing. At the end of a recording ZFE (ZERO FRAME EDIT) pulse is written on the tape and it will be read out at the editing point in the preroll operation in order to continue pictures before and after the editing point smoothly.



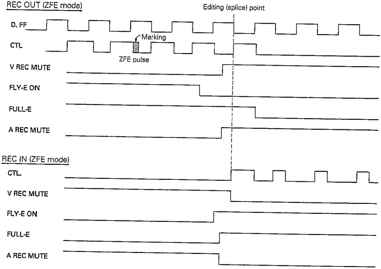
60%
40%
CTL. P
Ordinary CTL pulse .... ①
68.5%
31.5%
ZFE. P
(IC17 62)
CTL. P
ZFE pulse is input at .... ②
the end of a recording.
27.5%
72.5%
CTL. P
VISS signal is input in .... ③
the beginning portion
of the editing point.

Fig. 7-2-9 CTL pulse duty



ZFE pulse
① ① ① ② ① ① ① ③ ③ ③
③ ③ ③ ①
VISS.
63 ± 3 pulse

Fig. 7-2-10 Edit mode control pulse



REC OUT (ZFE mode)
Editing (splice) point
D. FF
CTL
Marking
ZFE pulse
V REC MUTE
FLY-E ON
FULL-E
A REC MUTE
REC IN (ZFE mode)
CTL
V REC MUTE
FLY-E ON
FULL-E
A REC MUTE

Fig. 7-2-11 Blanking switch timing

4. Control of frame servo

In recording the frame servo is controlled by controlling the DRUM PHASE DET signal (IC7 pin ④).

V. sync signal that underwent synchronizing separation is input to IC12 of the S/S board. IC12 is a frame detector, which generates FIELD FF waveform.

The phase of the FIELD FF is compared with that of the DRUM FF by IC501. When the phase of the FIELD FF is in advance of the DRUM FF's phase, IC501 pin ① outputs "H" to IC502, while it outputs "L" when the DRUM FF advances in the phase.

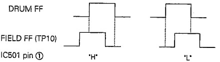

DRUM FF
FIELD FF (TP10)
IC501 pin ①
"H"
"L"

Fig. 7-2-12

IC404, IC402, IC403 detect whether the frame servo is locked or not in order to change over the switch of IC502, namely, when the frame servo is locked, "H" is output from TP3, while "L" is output when it is not locked.

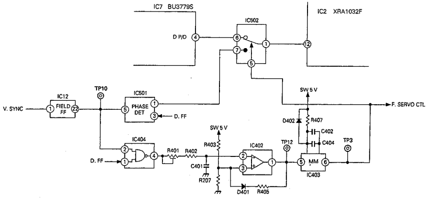

IC7 BU3779S
IC2 XRA1032F
IC502
D P/D ④
⑥
⑦
①
⑤
⑫
TP10
IC12
IC501
V. SYNC
① FIELD FF ㉒
PHASE DET
⑤
①
③
D. FF
SW 5 V
F. SERVO CTL
D402
R407
C402
C404
TP3
SW 5 V
IC404
R403
IC402
TP12
②
①
④
R401
R402
D. FF
C401
R207
②
③
①
⑤ MM ⑥
IC403
D401
R405

Fig. 7-2-13 Frame servo circuit

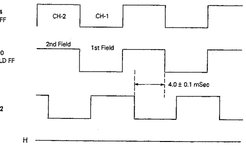


Fig. 7-2-14 Timing chart when frame servo is locked

7.3 VIDEO CIRCUIT

1. VITC MIX circuit

When the TIME CODE board is incorporated in the VTR, this circuit mixes VITC (Vertical Interval Time Code) signal in the V. blanking period. One line comprises of 90 bits and the signal is mixed in two lines of the 19H and 21H lines in the initial setting mode.

2. AUTO EQ MIX circuit

This circuit mixes reference signal supplied from the AUTO EQ board. In the initial setting, reference signal is mixed in 11 lines only in the S-VHS mode.

- Outline of AUTO EQ circuit

The AUTO EQ circuit is installed to prevent frequency response from deterioration caused by demagnetization of tape and to control irregularity in respective frequency characteristics of tapes used. Two reference signals of 625 kHz and 3.8 MHz are recorded in optional lines in the V. blanking period, and the video equalizer is controlled in playback to equalize PB level of each reference signal with that of the original. Accordingly, the frequency response is automatically adjusted in the S-VHS mode.

This VTR is designed to be used as a recorder, therefore, it adds reference signal but has not equipped with any automatic PB adjusting circuit. In case of the BR-S822E, it gets AUTO EQ reference signal blank in video output, however, the BR-S422E does not blank the reference signal and outputs it as it is added.

- Reference signal generator circuit

Reference signals are generated by the gate array IC (IC1, JCL0009). This IC receives 4 fsc clock through the pin ⑥ while it receives sync. signal through the pin ⑳, and it outputs 625 kHz reference signal through the pin ⑬ while 3.8 MHz reference signal through the pin ⑫. These reference signals are supplied to the LPF and BPF circuits which mix them to be output as the reference signal synchronizing with the sync. signal.

Pins ③, ④ and ⑤ function to control the reference signal insertion line which is selected by SW1. In detail, line selection is performed by SW1-2, SW1-3 and SW1-4, and, when all of them are on, nothing is selectd for insertion. If SW1-1 is off, the SW 5V signal line of the circuit is cut off, therefore insertion is not activated without change of the insertion lines set by SW1-2, -3 and -4.

R29 and R38 are variable resistors to adjust reference signal level so that the ratio between sync. level, 3.8 MHz level and 625 kHz level becomes 4 : 2.0 : 4.0 since this VTR has not the playback circuit for automatic level adjustment. (For a reference, the BR-S822E records sweep signal and plays it back to obtain the specific frequency response.) The above-mentioned ratio is determined to obtain the specific frequency response on the condition that the BR-S422E is used for recording and the BR-S822E for playback.

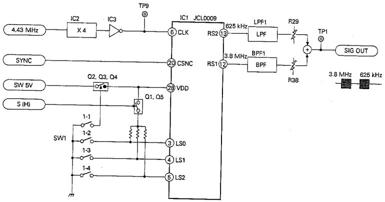


Fig. 7-3-1

3. Edge enhancer/noise canceller circuit (with sue of advanced limiter)

The circuit shown in Fig. 7-3-3 is the new edge enhancer (in recording) and the noise canceller (in playback) circuit that incorporates the advanced limiter inside.

The advance limiter circuit realizes the input/output characteristic shown in Fig. 7-3-2 by combining a differential amp. (IC11) and a limiter (IC12).

As the edge enhancer, this circuit hardly influences the frequency response of comparatively high amplitude signal. Therefore, enhancement in thin and light portions is visually the same as the effect of ordinary detail enhancers without emphasis in high amplitude portions, and picture is consequently natural.

As the noise canceller, it does not deteriorate high amplitude signal in the frequency response since it takes reverse operation of the edge enhancer. As a result, this circuit performs clear edge enhancement without getting picture unsightly owing to its function to cancel low level noise only.

- Edge enhancer circuit

In recording this circuit is supplied with luminance signal of 1.5 Vp-p. At that time, Q85 is off and Q84 is on since the level of PB(H) signal is "L". Therefore, the differential amp. inside the advance limiter circuit and the LPF circuit composed of C95 and R242 construct an HPF circuit whose cutoff frequency is 1 MHz. Inside the limiter circuit, only the low level components of the output of the HPF are output in the same phase as that of the input signal. Finally, this output is mixed with luminance signal that is delayed for the delay time (50 ns) of the limiter circuit, therefore, the circuit functions as the edge enhancer circuit.

- Noise canceller circuit

In playback this circuit is supplied with luminance signal of 2.0 Vp-p. At that time, Q84 is off and Q85 is on since the level of PB(H) signal is "H". Therefore, the LPF circuit composed of C96 and R241 and the differential amp. inside the advance limiter circuit function as the HPF circuit as same as it functions as the edge enhancer circuit. However, output of the HPF circuit has the reverse phase of that in the condition of the edge enhancer circuit, and the output of the limiter circuit consequently has the reverse phase of the input signal. As a result, the circuit functions as the noice canceller circuit.

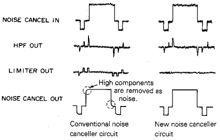


Fig. 7-3-4 Noise canceller circuit

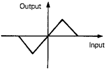


Fig. 7-3-2

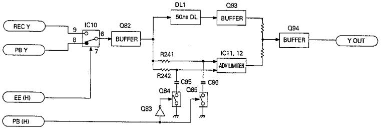
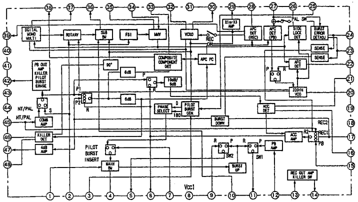


Fig. 7-3-3 Edge enhancer/noise canceller circuit

4. Color signal system

IC26 (M52062AFP) is the chrominance signal processing circuit which the main/sub balanced modulator, VCXO, 321 fh VCO, ACC, chroma ACC, APC, AFC, killer circuit, side lock detecting pilot burst insersion/erasure circuit, and pilot APC circuit are built in.


DGITAL MONO MULTI
ROTARY
SUB BM
FSI
MMV
VCXO
REC ON
X1 or X3 AMP
APC DET (REC)
APC DET (PB)
PAL SW
SIDE LOCK DET
BURST ERROR DETADJ
SENSE
SENSE
COMPOSITE COMPONENT DET
APC PC
AFC DET
PB OUT AMP KILLER PILOT BURST ERASE
90°
6dB
P
10dB/6dB
R
P
R
P1
P2
R
6dB
320fH VCO
NT/PAL
S
NT/PAL
COMB AMP
PHASE SELECT
0
180
PILOT BURST GEN
ACC DET
BURST DOWN
REC2
KILLER DET
R2
REC1
ACC AMP
PB
4dB AMP
PILOT BURST INSERT
R
P
R
P
SW2
SW1
PB AMP
MAIN BM
BURST UP
REC OUT AMP KILLER SW
Vcc1

PIN No.	Description	PIN No.	Description
1	MAIN BM IN	25	PILOT BURST GAIN ADJ
2	ROTARY SW IN	26	SIDE LOCK DET
3	PILOT BURST PHASE ADJ	27	PB APC FILTER
4	MAIN BM BYPASS	28	REC APC FILTER
5	SW2 OUT	29	VCXO OUT1
6	ACC OUT	30	VCXO OUT2
7	ACC IN	31	Vcc2
8	Vcc1	32	VCXO IN
9	REC CHROMA IN	33	PILOT BURST DET FILTER
10	SUB BM BYPASS	34	Hss IN
11	SW1 OUT	35	MMV TIMING
12	PB LOW CHROMA IN	36	SUB BM OUT
13	REC OUT AMP IN	37	HP OUT
14	REC LOW CHROMA OUT	38	PILOT BURST DET OUT
15	PB ACC IN	39	BURST ERROR OUT
16	CHROMA ACC FILTER	40	2/4/6 SW IN
17	REC ACC IN	41	R/T/P SW IN
18	P/S/N SW IN	42	PO OUT AMP OUT
19	GND	43	CPS/CPN/VHS SW IN
20	VCO ADJUST	44	GND
21	BURST ACC FILTER	45	COMB AMP IN
22	REC AFC FILTER	46	KILLER REF
23	BURST ADJUST	47	COMB DRIVE OUT
24	BURST ERROR DET	48	KILLER FILTER

Fig. 7-3-5

- **ALU circuit**

Besides the burst ACC, IC26 incorporates the ALU circuit as the chroma ACC inside, and chroma signal whose low frequency has been converted is input through pin ⑬ to activate ALU function.

The ALU circuit functions to improve S/N ratio of low level color signal. The principle of the function is as follows. In recording low level color signal is amplified by this circuit together with burst signal. When this signal is played back, the amplified low level component is returned to the original level with reduced noise components by the ACC circuit (functioning to stabilize burst level) and improved S/N ratio.

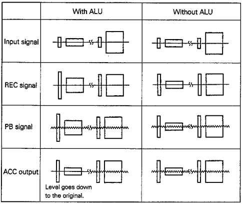

With ALU
Without ALU
Input signal
REC signal
PB signal
ACC output
Level goes down
to the original.

Fig. 7-3-6 Principle of ALU circuit

5. Outline of CNR circuit (IC23)

The CNR circuit removes random noise contained in PB color signal and the IC BA7233 is used for this circuit as well as other models. Since this circuit removes noise components by arithmetic processing of PB color signal and the signal 1H before, malfunction may occur in portions without line correlation and it causes vertical blurring in color. To prevent this problem, non-correlative pulse that is obtained from luminance signal is used to turn off the CNR circuit for the portions without line correlation. Moreover, the CNR circuit is turned off in the Edit mode.

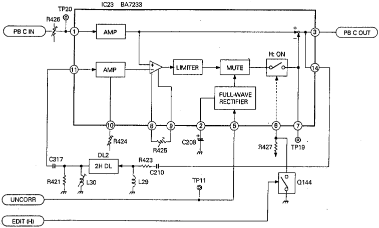

IC23 BA7233
TP20
R426
PB C IN
AMP
AMP
LIMITER
MUTE
H: ON
FULL-WAVE
RECTIFIER
PB C OUT
R424
R425
C208
R427
TP19
C317
DL2
2H DL
R423
C210
R421
L30
L29
TP11
Q144
UNCORR
EDIT (H)
1
2
3
5
6
7
8
9
10
11
14

Fig. 7-3-7 CNR circuit

7.4 AUDIO CIRCUIT

● GENERAL DESCRIPTION

The BR-S422E is a VTR capacitated for 2-channel audio recording on the normal track and the Hi-Fi track.
The specifications of the input and output circuits are described below.

7.4.1 Input and output systems

1. 50-pin multi-connector
   - Balanced input
   - High impedance (10 kΩ approx.)
   - Input sensitivity : –20 dBs
2. EXT. MIC terminal
   - Balanced input
   - High impedance (10 kΩ approx.)
   - Input sensitivity: +4 dBs (10 kΩ)/–60 dBs (3 kΩ)
3. Input attenuator (for MIC input only)
   - ±10 dB to –60 dB of the EXT. MIC terminal, settable with the internal switch.
4. Limiter characteristic
   - The limiter is activated when the level is +13 dB compared with 0 VU of the reference level, and the limiting range is extendable up to +26 dB.
5. Camera MIC amplifier circuit
   - Balanced audio signal input through the 50-pin connector is converted into unbalanced audio signal by IC1.
     All of input levels are shown in Fig. 7-4-1, which illustrates how respective input levels changes. When input from the 50-pin connector has –20 dBs level, its level is dropped to –30 dBs by the –10 dB amplifier first and then the signal is connected to the switch. At the same time, the signal is transformed from the unbalanced signal to the balanced signal. The amplifier having –10 dB gain is IC1, which has the dynamic range of +38 dB enough for the clipping level at the amplifier's output point as compared with the –20 dB input of the reference level.
6. MIC amplifier circuit
   - In case of mic input, –60 dBs input of the reference level is amplified to –30 dBs by the +30 dB amplifier. The feedback level of this amplifier is variable by additional +10 dB or –10 dB with switch setting, and this variable function is used as the input attenuator. This amplifier is good at the S/N ratio and has 40 dB head room in the gain-up condition up to +10 dB clipping output level.
     The input selector switch (CAM/LINE) in the next stage is switched with the external XLR input by the AUDIO INPUT SELECT switch inside the side panel. In consideration of monaural input from the camera mic, setting of the switch to the CH1 position makes it possible to record camera mic input on the CH2 in addition to the same recording on the CH1.

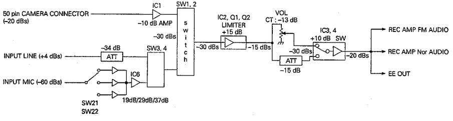

50 pin CAMERA CONNECTOR
(–20 dBs)
IC1
–10 dB AMP
SW1, 2
switch
–30 dBs
INPUT LINE (+4 dBs)
–34 dB
ATT
SW3, 4
INPUT MIC (–60 dBs)
IC6
SW21
SW22
19dB/29dB/37dB
IC2, Q1, Q2
LIMITER
+15 dB
–30 dBs
–15 dBs
VOL
CT : –13 dB
ATT
–15 dB
IC3, 4
+10 dB SW
–30 dBs
–20 dBs
REC AMP FM AUDIO
REC AMP Nor AUDIO
EE OUT

Fig. 7-4-1 Input level diagram

7. Limiter amplifier circuit

- The limiter amplifier (IC2) that is newly employed in the BR-S422 functions to record over-level input without distortion, therefore, it is activated only when input has excessively over-level and has not gain adjustment function for low level input. The standard output level of this limiter amplifier is –15 dBs, and it automatically controls output level not to exceed the standard level and + 6 dB at maximum.

IC2 is an operational amplifier whose gain is determined by R14 and R13. The gain G is generally expressed by the following equation.

$$G = 1 + (R13/R14) = 1 + 220\ \mathrm{k\Omega}/47\ \mathrm{k\Omega} = 5.68 \text{ times}$$
$$= 15\ \mathrm{dB}.$$

However, there is the attenuator circuit composed of R11 and R32 in the input circuit, therefore, the circuit composed of Q2 FET and R25 connected in parallel is connected with R32 in series. As a result, the attenuator continuously varies attenuation level up to –26 dB according to the resistance of Q2 when Q2's level is in the range between –0.1 dB and the full capacity.

When a DC voltage which is higher than the specific DC voltage (4 V) determined by R33 and R34 and rectified by D6 is applied to Q2, resistance between the drain and the source declines and the attenuator starts operation to decrease the input level of the IC (see Fig. 7-4-2).

In the same manner, DC voltage rectified by D10 is impressed to Q2 in order to prevent over-modulation by monitoring the output level that is logarithmically compressed to 6 dB at frequency modulation.

This loop circuit has the time constant determined by C16, R19 and R20, and the attack time and the recover time are 0.85 msec and 4 sec respectively, which are convenient for smooth operation of the VTR.

Moreover, output of D14 is supplied to the limiter circuit, too, and this signal is added with muting pulse that is generated when Q8 and Q9 get SW 9V and SAVE 9V pulses to rise for the purpose of preventing recording signal from getting noise mixing.

8. REC level adjuster circuit

- Output of IC2 is attenuated by –15 dB by R35 and R36 when the REC LEVEL switch inside the side panel is set to FIX. When this switch is set to the MANUAL, recording level can be adjusted by the AUDIO REC LEVEL VR on the side panel.

The setting of the REC LEVEL switch to the FIX position is useful in emergency since the level is nearly equal to the level when the volume is set to the mid point.

IC3 which incorporates an analog switch capable of selecting adjusting signal inside functions to control recording level so that it inputs signal supplied to pin ⑦ from between two signals supplied to pins ⑦ and ② when the pin ① has "H" level. The "L" level of pin ① is not 0 V but about 4.5 V equivalent to 1/2 Vcc for the reason of the linarity of the amplifier, and "L" level is supplied by R167 connected with the collector of the transistor switch Q44.

The signal whose level is adjusted as mentioned above is supplied to the normal recording amp (IC16) and the Hi-Fi recording amp (IC15). IC10 adjusts the signal level to be the reference PB level (–6 dBs) by R128, and the signal is output as EE output signal from the AUDIO-1 terminal.

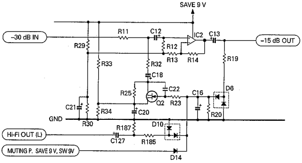


Fig. 7-4-2 Limiter circuit (L-ch)

9. Change of line level (from +4 dBs to –20 dBs)
   - The XLR external input connector is switchable for MIC input or LINE input by switching the –60 dBs/+4 dBs sensitivity selector switch. Comparing with the BR-S411E which has the –20 dBs external input selector switch, the BR-S422E removes this selector since its function is seldom used. If 10 dB attenuator is used for the –60 dBs setting, the sensitivity is –50 dBs that is still too high and useless for actual recording. Therefore, it may be necessary to change the sensitivity to –20 dBs with the +4 dBs setting. In this case, it is suggested to change the attenuator level to –10 dB from the present –34 dB. To obtain the required sensitivity, replace R62 (180 Ω) that determines the attenuation level with a 3.3 kΩ resistor.

10. Monitor output circuit
    - IC12 of the analog switch selects monitor signal, and Hi-Fi or NORM PB audio output can be selected with the MONITOR OUT switch on the operation panel. The selection function of this IC is activated only in the playback mode.

      IC10 and IC11 function to output EE audio signal with the SAVE 9 V activated even when power supply of the switch system is off. Namely, the SAVE 9 V has the same function as the switch system in the BR-S422E.

      Signal output from pin ⑤ is supplied through the muting circuit of Q6 and the MOTHER board to the RCA pin terminal on the CONNECTOR board, and it is output from the connector. On the other hand, the signal from pin ⑤ is also supplied to IC13 and IC18 as the meter indication signal and the output signal for the headphone.

      Q39 and Q40 function as the switch circuit. When Q3 is off in the MIX mode selected by the MONITOR OUT switch on the subpanel, mixture of CH1 and CH2 signals is output as the headphone signal. When Q40 is turned off by the switch, signal on one channel is selected to output.

      Alarm signal output from the headphone is generated by mixing the alarm tone signal that is output from IC17 of the CPU in emergency and at the tape end after level setting by R120 of the MONITOR LEVEL control.

      Q10 and Q11 suppress generation of phut noise generated when the mode is shifted to the playback.

7.4.2 Hi-Fi audio recording system

IC15 is the Hi-Fi audio recording amp. whose pin 84 is used for signal input and its reference input level is –20 dBs. This IC is equipped with an internal AGC gain amp. but it has no gain as 0 dB since pin ③ is of 0 Ω.

After mode is shifted from REC to PB, the LPF limits frequencies higher than 20 kHz and drives the PNR (Peak Noise Reduction) circuit. Regarding this circuit brief explanation appears in the following since there are detailed explanations in many instructions of other models.

In the Hi-Fi recording system of the VHS format, the frequencies of two carriers of CH1 (1.4 MHz) and CH2 (1.8 MHz) are modulated in the range of ±50 kHz, and the FM signals are recorded on the video track by the Hi-Fi REC head.

To obtain sufficient dynamic range with a low f/c ratio (ratio between frequency deviation and carrier frequency), 2:1 logarithmic compression is applied in the periods of 240 μsec and 24 μsec (663 Hz to 6631 Hz) for bottom-up recording at the level of 6 dB/oct. Those operations are performed by the VCA, PEAK DET and WEIGHTING circuit connected with pins ⑧, ⑨ and ⑩ respectively.

The pre-emphasis circuit which is installed to prevent deterioration in S/N ratio caused by so-called triangular noise that frequently occurs in the FM recording system emphasize high frequencies of 56 μsec and 20 μsec (2842 Hz to 7958 Hz) by the level of 6 dB/oct.

The VCO circuit applies frequency modulation to carriers, and there is a limiter circuit used for preventing over-modulation not to exceed the utmostmodulation limit of ±150 kHz. The LPF which is installed in the previous stage of pin 21 to output signal prevents video signal from getting undesirable influence of higher harmonic distortion.

IC15 has the command demodulation circuit, which converts serial command from the syscon into parallel data together with IC19 to control the audio circuit.

7.4.3 Normal audio system

1. IC16, IC17 (LA7285M)

The LA7285M incorporates the LINE amp, REC amp, PB amp and the limiter circuit inside.

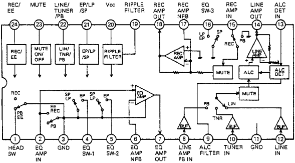

REC/ EE
MUTE
LINE/ TUNER /PB
EP/LP /SP
Vcc
RIPPLE FILTER
REC AMP OUT
REC AMP NFB
EQ SW-3
REC AMP IN
LINE AMP OUT
ALC DET IN
24
23
22
21
20
19
18
17
16
15
14
13
REC/ EE
MUTE ON/ OFF
LIN/ TNR/ PB
EP/LP /SP
RIPPLE FILTER
REC AMP
LP EP
SP
REC
PB
LINE AMP
MUTE
ALC
ALC DET
MUTE
PB
LIN
TNR
BUF
BUF
BUF
REC
PB EE
EE REC
PB
SP LP
EP
SP LP
EP
EQ AMP
1
2
3
4
5
6
7
8
9
10
11
12
HEAD SW
EQ AMP IN
GND
EQ SW-1
EQ SW-2
EQ AMP NFB
EQ AMP OUT
LINE AMP PB IN
ALC FILTER
TUNER IN
GND
LINE IN

Fig. 7-4-3 Block diagram

- Pin functions

Pin No.	Name	Function		
1	HEAD SW 1	ON : EE and PB modes, OFF : REC modes		
2	EQ AMP INPUT	PB signal input from audio head		
	and			
	HEAD SW 2	ON : EE and REC modes, OFF : PB mode		
3	GND	Ground for exclusive use of head switch of pin ①, EQ amp. and PB EP switch		
4	EP SW 1	Not used		
5	EQ SW 2	Not used		
6	EQ AMP NFB	To apply negative feedback for demonstrating equalizer characteristic		
7	EQ AMP OUTPUT			
8	LINE AMP PB INPUT	PB signal input from EQ amp.		
9	ALC FILTER	Detection and setting of attack time and recovery time according to the time constant of CR.		
10	TUNER INPUT	CH2 for input of time code signal (LTC)		
11	GND	Ground for circuits and blocks except head switch and EQ amp circuit		
12	LINE INPUT	EE, REC signal input		
13	ALC DETECTION INPUT	ALC level is determined by attenuation by R255, R256 (CH1) and R285, R286 (CH2).		
14	LINE AMP OUTPUT			
15	REC AMP INPUT	Recording current is set by R254 (CH1) and R284 (CH2). REC amp. is inversional amp.		
16	LP SW	Not used		
17	REC AMP NFB	To boost high frequency response depending on L, C, R connected.		
18	REC AMP OUTPUT			
19	RIPPLE FILTER			
20	POWER SUPPLY (Vcc)			
		To remove ripple with capacitor		
		H	M	L
21	EP/LP/SP CONTROL	EP	LP	SP
22	LINE TUNER PB CONTROL	LINE	TUNER	PB
23	MUTE CONTROL	MUTE ON	—	MUTE OFF
24	REC/EE CONTROL	EE	—	REC

Table 7-4-1

2. IC18 (CXA1102M)

IC18 is the 2-channel Dolby B type noise reduction circuit. Its encoding characteristic is shown in Fig. 7-4-4.

Pin ⑤ switches NR on/off.
"H" : NR OFF, "L" : NR ON
Pin ⑫ switches REC/PB.
"H" : PB (decoding), "L" : REC (encoding)

3. REC amp circuit

The REC amp circuit includes the low boost circuit composed of C208, C209, C210, R259, R260 and R261, and the REC amp. of IC16 to compensate high component loss in recording and playback. This circuit has a high boost equalizing characteristic which is shown in Fig. 7-4-5.

4. PB equalizer

Normal audio output from the A/C head is supplied to IC16 through pin ② (L-ch) and amplified by the PB amp inside the IC. This IC applies negative feedback to the signal so as to function as the PB equalizer amp. The frequency characteristic of this PB equalizer amp is shown in Fig. 7-4-6.
Signal input through pin ⑦ is supplied to R271 to adjust the PB level and again input from pin ⑧. After that, signal flow is the same as in recording.

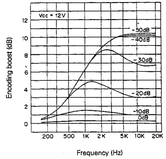


Fig. 7-4-4 Encoding characteristic

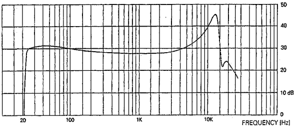


Fig. 7-4-5 Recording frequency response

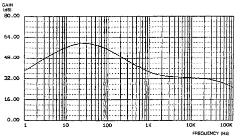


Fig. 7-4-6 Frequency response of PB EQ amp.

7.5 MECHANISM OPERATION

7.5.1 Function of motors

1. Drum motor

The drum motor composed of a stator and rotor inside the lower drum drives the upper drum to which video heads are attached.

2. Capstan motor

The capstan motor forwards and rewinds the tape by rotating in the normal and reverse directions.

1. By normal rotation of the capstan motor the take-up gear comes to the TU (take-up) side.
   In the PB (playback) mode, rotation of the capstan motor is transmitted to the take-up reel disk via the clutch mechanism.
2. By reverse rotation of the capstan motor the take-up gear comes to the SUP (supply) side.
   In the REV (Reverse; Search REW) mode, the clutch mechanism transmits rotation of the capstan motor to the supply reel disk.
3. By normal rotation of the capstan motor the take-up idler which is in contact with the pulley gear comes to the TU side.
   In the FF (Fast Forward) mode, rotation of the capstan motor is directly transmitted to the take-up reel disk. (See Fig. 7-5-2.)
4. When the capstan motor rotates reversely, the take-up idler comes to the SUP side.
   In the REW (Rewind) mode, rotation of the capstan motor is directly transmitted to the supply reel disk.

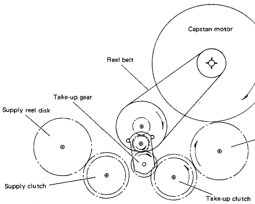

Capstan motor
Reel belt
Take-up gear
Supply reel disk
Take-up reel disk
Supply clutch
Take-up clutch

Fig. 7-5-1 Capstan motor's function (in PB mode)

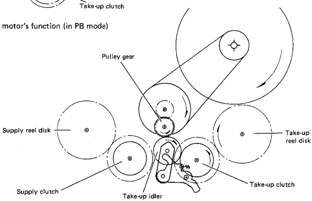

Pulley gear
Supply reel disk
Take-up reel disk
Supply clutch
Take-up idler
Take-up clutch

Fig. 7-5-2 Capstan motor's function (in FF mode)

3. Mode control motor

The mode control motor rotates in the normal or reverse direction to move the control cam which shifts component parts for the selected mode.

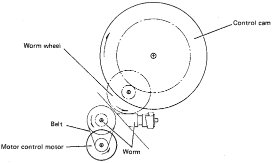

Control cam
Worm wheel
Belt
Motor control motor
Worm

Fig. 7-5-3 Mode control motor's function (in Loading direction)

7.5.2 Mode shift

The control cam changes its position appropriately for shifting the component parts so that they works to meet the selected mode.

Symbol No.	Mode	Details of Mode
1 ↑	EJECT	Ejection (to take out cassette)
2	FF/REW	FF (Fast Forward), REW (Rewind), Short FF
3	STOP	Stop, Short REW Loading, Unloading
4	PLAYBACK	Playback, Still, Shuttle Search (+), REC (Recording), INSERT (Insertion), After-recording
5	BACK SPACE	Back spacing
6	PAUSE	Pause
↓ 7	REVERSE	REV (Reverse), Shuttle Search (–), Preroll

————→ : in the Loading direction
– – – – – – → : in the Unloading direction

Table 7-5-1 Mode shift

1. Stop mode (Symbol No. 3)

1. In this mode, the main brake is in close contact with the clutch to prevent the tape from slackening in the cassette.
2. The take-up idler is fixed at the neutral position by function of the cam (3).

Cam (3) → Slide plate → Relay lever → TU idler
↳ Control plate

3. Both the FF brake and REW brake are in contact with the reel disk.
4. The search brake is off the reel disk by function of the cam (1). (Fig. 7-5-5)
5. The pinch roller is positioned considerably apart from the capstan by function of the cam (2). (Fig. 7-5-6)

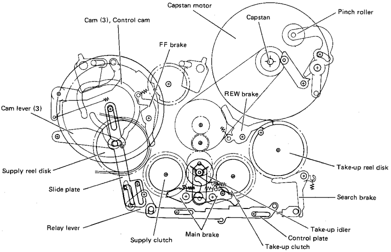

Capstan motor
Pinch roller
Capstan
Cam (3), Control cam
FF brake
REW brake
Cam lever (3)
Take-up reel disk
Supply reel disk
Search brake
Slide plate
Relay lever
Take-up idler
Main brake
Control plate
Supply clutch
Take-up clutch

Fig. 7-5-4 Stop mode

2. Loading motion (Symbol Nos. 3 to 4)

1. Not to disturb tape travel from the cassette the main brake is off the clutch by function of the cam (3). (Fig. 7-5-9)
2. As the FF brake and REW brake are in contact with the reel disk, tape is prevented from slackening caused by inertia.
3. The search brake is off the reel disk by function of the cam (1).

Cam (1) → Cam lever (2) → Rod (1) → Rod (2) → Search brake

4. The pinch roller is in contact with the capstan by function of the cam (2). (Fig. 7-5-6)
5. The mode control motor normally rotates to drive the loading ring in order to pull tape out of the cassette.

Mode control motor → Worm → Worm wheel → Control cam → Loading gear → Supply loading ring → Connect gear → Take-up loading ring

6. The take-up gear lays a load on the take-up clutch by gearing into it so that tape is mainly pulled out of the supply side.

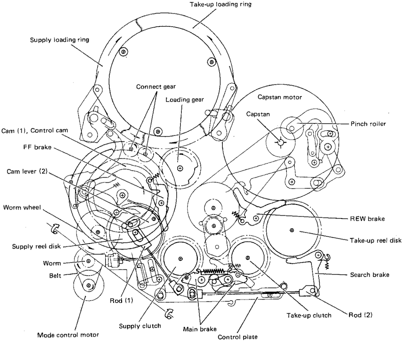

Take-up loading ring
Supply loading ring
Connect gear
Loading gear
Capstan motor
Capstan
Pinch roller
Cam (1), Control cam
FF brake
Cam lever (2)
Worm wheel
REW brake
Take-up reel disk
Supply reel disk
Worm
Belt
Search brake
Rod (1)
Take-up clutch
Rod (2)
Supply clutch
Main brake
Mode control motor
Control plate

Fig. 7-5-5 Loading motion

3. **Playback mode** (Symbol No. 4)

1. The main brake is off the clutch by function of the cam (3) not to disturb tape in travel. (Fig. 7-5-9)
2. Both the FF and REW brakes are off the reel disk by function of the cam (2).

Cam (2) → Cam lever (1) → Relay arm → PR plate ┐
└→ FF brake
└→ REW brake

3. The search brake is off the reel disk by function of the cam (1). (Fig. 7-5-5)
4. By function of the cam (2) the pinch roller is in contact with the capstan for tape travel.

Cam (2) → Cam lever (1) → Relay arm → PR plate ┐
└→ Toggle arm → Pinch roller

5. The capstan motor is rotating to forward and rewind tape. (Fig. 7-5-2)
6. Together with the tension band the tension pole controls back-tension applying it to tape.

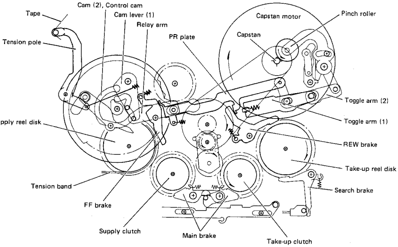

Tape
Tension pole
Cam (2), Control cam
Cam lever (1)
Relay arm
PR plate
Capstan motor
Capstan
Pinch roller
Toggle arm (2)
Toggle arm (1)
REW brake
Take-up reel disk
Search brake
Supply reel disk
Tension band
FF brake
Supply clutch
Main brake
Take-up clutch

Fig. 7-5-6 Playback mode

4. Pause mode (Symbol No. 6)

1. The main brake is in close contact with the clutch in order to prevent tape from slackening in the cassette.
2. Both FF and REW brakes are in contact with the reel disk.
3. The search brake slightly contacts the reel disk.
4. The tension pole decreases tension to tape by function of the cam (1).

   Cam (1) → Cam lever (2) → Rod (1) → Cancel lever → Tension pole

5. Capstan motor is stopping.
6. The pinch roller is slightly off the capstan by function of the cam (2). (Fig. 7-5-6)

5. Back-space mode (Symbol No. 5)

1. Motion in this mode is the same as that in the playback mode except the following items (2) through (4). (Fig. 7-5-6)
2. The search brake slightly contacts the reel disk. (Fig. 7-5-7)
3. The tension pole decreases tension to tape by function of the cam (1). (Fig. 7-5-7)
4. The capstan motor rotates to turn tape travel backwards and rewind the tape by the supply reel disk.

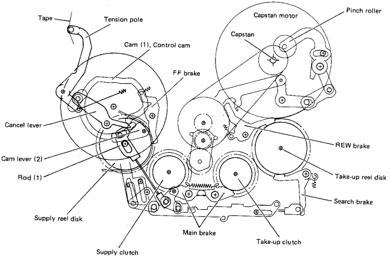

Tape
Tension pole
Cam (1), Control cam
FF brake
Capstan motor
Capstan
Pinch roller
Cancel lever
Cam lever (2)
Rod (1)
REW brake
Take-up reel disk
Search brake
Supply reel disk
Main brake
Take-up clutch
Supply clutch

Fig. 7-5-7 Pause mode

6. Reverse mode (Symbol No. 7)

1. The main brake is off the clutch by function of the cam (3). (Fig. 7-5-9)
2. Both the FF and REW brakes are off the reel disk by function of the cam (2). (Fig. 7-5-6)
3. The search brake slightly contacts the reel disk to prevent tape from slackening resulting from inertia.
4. The capstan motor rotates to transport and rewind tape. (Fig. 7-5-2)
5. The tension pole releases tape from back-tension by function of the cam (1).
6. The pinch roller is in contact with the capstan by function of the cam (2) in order to transport tape. (Fig. 7-5-6)

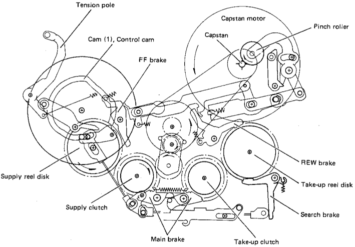

Tension pole
Cam (1), Control cam
FF brake
Capstan motor
Capstan
Pinch roller
REW brake
Take-up reel disk
Search brake
Supply reel disk
Supply clutch
Main brake
Take-up clutch

Fig. 7-5-8 Reverse mode

7. **FF/REW mode** (Symbol No. 2)

1. The main brake is off the clutch by function of the cam (3).

   Cam (3) → Slide plate → Relay lever → Control plate ┐
   └→ Off lever → Main brake

2. The TU gear is fixed at the neutral position by the hold bar according to function of the cam (3).

   Cam (3) → Slide plate → Relay lever → Control plate ┐
   └→ TU idler → Hold lever

3. Both the FF and REW brakes are in contact with the reel disk to prevent tape from inertia resulting from inertia.
4. The search brake is off the reel disk by function of the cam (1). (Fig. 7-5-5)
5. The rod (2) is off the lock plate.
6. The capstan motor rotates to transport tape from the SUP side to the TU reel in the FF mode, for example. (Fig. 7-5-4)
7. The housing arm stud is locked by the lock plate.

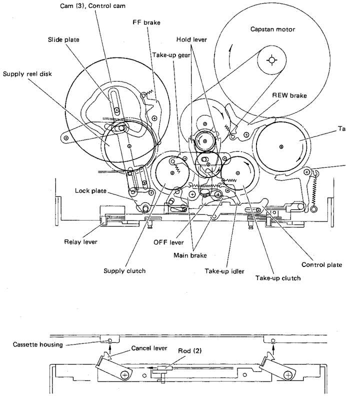

Cam (3), Control cam
FF brake
Capstan motor
Slide plate
Hold lever
Take-up gear
Supply reel disk
REW brake
Take-up reel disk
Search brake
Lock plate
Relay lever
OFF lever
Main brake
Control plate
Supply clutch
Take-up idler
Take-up clutch
Cassette housing
Cancel lever
Rod (2)

Fig. 7-5-9 FF mode

8. The cam brake is in contact with the brake cam by function of the cam (3).

   Cam (3) → Slide plate → Relay lever → Cam brake

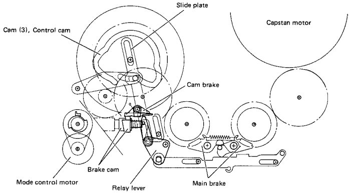
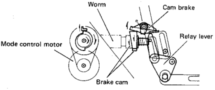

Slide plate
Cam (3), Control cam
Capstan motor
Cam brake
Brake cam
Mode control motor
Relay lever
Main brake

Fig. 7-5-10 FF/REW mode

9. When the mode is changed from the FF/REW to the EJECT, the mode control motor reversely rotates. As a result, the brake cam rotates pushing the cam brake aside. (Reverse rotation: in clockwise direction in the figure)


Worm
Cam brake
Relay lever
Mode control motor
Brake cam

10. On the other hand, when the mode is changed from this to the STOP, the mode control motor normally rotates and the cam brake stops rotation of the brake cam, which therefore pushes the kick lever to release the relay lever from the slide plate. At this time, the main brake and the capstan brake immediately start in operation.

    Mode control motor → Worm → Brake cam
    → Kick lever → Relay lever → Cam brake ↑
    → Control plate
    → Main brake
    → Capstan brake

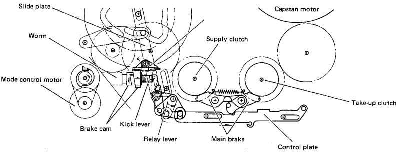

Slide plate
Worm
Mode control motor
Capstan motor
Supply clutch
Take-up clutch
Brake cam
Kick lever
Relay lever
Main brake
Control plate

Fig. 7-5-11 Cam brake motion

8. Eject mode (Symbol No. 1)

1. The rod (2) pushes the lock plate by function of the cam (1) in order to release the housing arm stud from the lock plate.

   Cam (1) → Cam lever (2) → Rod (1) → Rod (2) ┐

   └→ Lock plate

2. The main brake is off the clutch by function of the cam (3). (Fig. 7-5-9)
3. Both the FF and REW brakes are in contact with the reel disk.
4. The search brake is in contact with the reel disk.

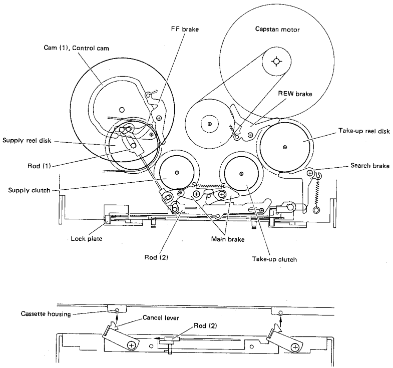
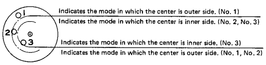

FF brake
Capstan motor
Cam (1), Control cam
REW brake
Take-up reel disk
Supply reel disk
Search brake
Rod (1)
Supply clutch
Lock plate
Main brake
Rod (2)
Take-up clutch
Cassette housing
Cancel lever
Rod (2)

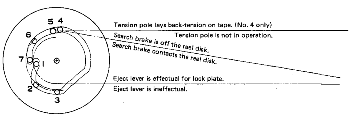
Fig. 7-5-12 Eject mode

7.5.3 Timing of control cam



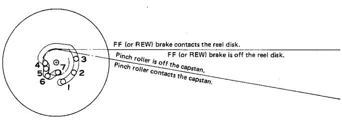
1
2
3
Indicates the mode in which the center is outer side. (No. 1)
Indicates the mode in which the center is inner side. (No. 2, No. 3)
Indicates the mode in which the center is inner side. (No. 3)
Indicates the mode in which the center is outer side. (No. 1, No. 2)

– Cam (1) –



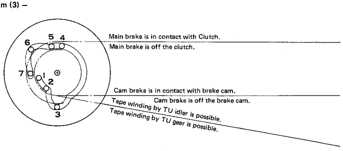
5 4
6
7
1
2
3
Tension pole lays back-tension on tape. (No. 4 only)
Tension pole is not in operation.
Search brake is off the reel disk.
Search brake contacts the reel disk.
Eject lever is effectual for lock plate.
Eject lever is ineffectual.

– Cam (2) –



4
5
6
7
3
2
1
FF (or REW) brake contacts the reel disk.
FF (or REW) brake is off the reel disk.
Pinch roller is off the capstan.
Pinch roller contacts the capstan.

– Cam (3) –



5 4
6
7
1
2
3
Main brake is in contact with Clutch.
Main brake is off the clutch.
Cam brake is in contact with brake cam.
Cam brake is off the brake cam.
Tape winding by TU idler is possible.
Tape winding by TU gear is possible.

Fig. 7-5-13 Timing of control cam

7.6 TIME CODE GENERATOR CIRCUIT (SA-R200E)

7.6.1 General description

The SA-R200E time code generator which is incorporated in the BR-S422E enables the VTR to write in VITC and LTC time codes comformable to the SMPTE standard.

For recording LTC data the AUD-2 head of the normal audio is used.

When it is intended to record time code in the REC RUN mode, set the AEF switch to the NORMAL position (for zero frame editing) since this VTR is not equipped with any time code reader circuit. When the AEF switch is set to the QUICK position in recording, editing point is overlapped and time code is not continously recorded.

For detail of the time codes, refer to the Video Technical Guide of the BR-S822E.

7.6.2 Time code generator circuit

IC1 functions as the time code generator that generates two time code signals of LTC and VITC. LTC output (LTCO) and VITC output (XVTO) are output in the timing as shown in Fig. 7-6-2.

The timing that the syscon presets data to the time code generator is shown in Fig. 7-6-3.

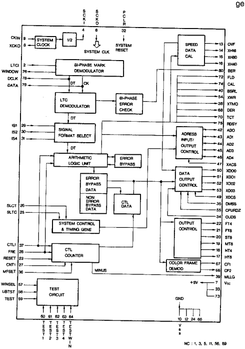

SCKI
SCKO
PCLR
4
6
32
CKIN 9
XCKO 8
SYSTEM CLOCK
1/2
SYSTEM CLK
SYSTEM RESET
LTCI 2
WINDOW 76
DCLK 78
DATA 79
BI-PHASE MARK DEMODULATOR
DT
CK
LTC DEMODULATOR
BI-PHASE ERROR CHECK
IS1 29
IS2 30
IS4 31
SIGNAL FORMAT SELECT
ARITHMETIC LOGIC UNIT
ERROR BYPASS
ERROR BYPASS DATA
NON ERROR BYPASS DATA
CTL DATA
SLCT 26
SLTC 25
SYSTEM CONTROL & TIMING GENE
CTLI 37
FRE 28
RESET 23
CNT1 27
MFSET 36
CTL COUNTER
MINUS
WINSEL 57
UBTST 58
TEST 59
TEST CIRCUIT
60 61 62 63 64
TEST1 TEST2 TEST3 TEST4 TESTWIN
SPEED DATA CAL
13 OVF
14 XH16
15 XH80
16 XH40
80 BER
72 FLD
74 CAL
40 BSRL
54 XWR
38 XTMO
68 DER
70 TCT
75 RDSY
ADRESS INPUT/ OUTPUT CONTROL
42 AD0
43 AD1
44 AD2
45 AD3
46 AD4
47 XACS
DATA OUTPUT CONTROL
50 XDO0
51 XDO1
52 XDO2
53 XDO3
49 XDCS
35 DMSS
55 CPURDZ
34 OUDS
OUTPUT CONTROL
22 FT4
21 FT8
20 ST8
19 MT8
18 HT4
17 HT8
COLOR FRAME DEMOD
67 CF1
66 CF2
39 MLLG
+5V
7 Vcc
33
73
GND
10 12 24 65
Vss
NC : 1, 3, 5, 11, 56, 69

Fig. 7-6-1 VC2067A

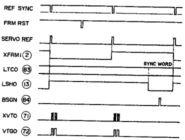

REF SYNC
FRM RST
SERVO REF
XFRMI ②
LTCO (83)
LSHO ⑬
BSGN (84)
XVTO (71)
VTGO (72)
SYNC WORD

Fig. 7-6-2 Time code generator timing chart

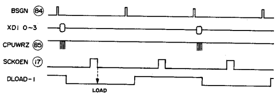
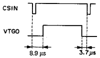

BSGN (84)
XDI 0~3
CPUWRZ (85)
SCKOEN ⑰
DLOAD-I
LOAD

Fig. 7-6-3 Data preset timing chart

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>1, 26, 47, 70, 90, 107</td><td>GND</td><td>I</td><td>GND</td></tr>
<tr><td>2</td><td>XFRMI</td><td>I</td><td>Frame signal input</td></tr>
<tr><td>6
7</td><td>VDI
VDO</td><td>I
O</td><td>V. sync drive input
V. sync drive output — VD signal separated from CSIN signal of pin⑩</td></tr>
<tr><td>8
9</td><td>HDI
HDO</td><td>I
O</td><td>H. sync drive input
H. sync drive output — HD signal separated from CSIN signal of pin⑩</td></tr>
<tr><td>10</td><td>CSIN</td><td>I</td><td>Composite sync signal input</td></tr>
<tr><td>12
13</td><td>LSHI
LSHO</td><td>I
O</td><td>LTC synchronous signal "H" input
output
To synchronize start bit of LTC output with video signal.</td></tr>
<tr><td>14</td><td>LCKI</td><td>I</td><td>LTC clock input - To generate LTC sync signal (x1 speed : 8.0 kHz)</td></tr>
<tr><td>19
20
21</td><td>LSBO
LSCO
LSDO</td><td>O
O
O</td><td>LTC sync signal B output — Synchronizing with output LTC.
LTC sync signal C output External multiplexer is controlled with these signals to input
LTC sync signal D output serial signal to input port of pin ㉒ – ㉕ .</td></tr>
<tr><td>22
23
24
25</td><td>PORT A
PORT B
PORT C
PORT D</td><td>I
I
I
I</td><td>Serial signal input ports</td></tr>
<tr><td>27
28
29</td><td>IS1
IS2
IS4</td><td>I
I
I</td><td>INPUT SIGNAL FORMAT SELECT 1
INPUT SIGNAL FORMAT SELECT 2
INPUT SIGNAL FORMAT SELECT 4
<table>
<tr><th>DF/NDF SW</th><th>S1</th><th>S2</th><th>S4</th><th>Signal Name</th><th>System</th></tr>
<tr><td>DF</td><td>H</td><td>H</td><td>H</td><td>NTSC DROP FRAME</td><td>525/60</td></tr>
<tr><td>NDF</td><td>L</td><td>H</td><td>H</td><td>NTSC NON-DROP FRAME</td><td>525/60</td></tr>
<tr><td>—</td><td>L</td><td>L</td><td>H</td><td>PAL/SECAM</td><td>625/50</td></tr>
<tr><td>—</td><td>L</td><td>L</td><td>L</td><td>FILM</td><td>655/48</td></tr>
</table></td></tr>
<tr><td>30</td><td>PCLR</td><td>I</td><td>Power ON clear input ↑</td></tr>
<tr><td>49</td><td>LTCI</td><td>I</td><td>LTC input
Time code input only in normal bit rate (x1 speed)</td></tr>
<tr><td>63</td><td>BSCT</td><td>O</td><td>BUSY CTL signal output
H : During control data output just after CTL pulse fall</td></tr>
<tr><td>64</td><td>CTLI</td><td>I</td><td>CTL signal input
CTL counter is stepped up at this trailing edge.</td></tr>
<tr><td>65</td><td>FWRE</td><td>I</td><td>CTL direction signal input $\overline{\text{FWD}}\,|\,\text{REV}$
To input signal indicating tape transport direction at stepup by CTLI signal</td></tr>
<tr><td>66</td><td>CTLRST</td><td>I</td><td>CTL reset signal input</td></tr>
<tr><td>67</td><td>DLOD3</td><td>I</td><td>DATA LOAD 3 input
Signal input to load control data with XDI0–3</td></tr>
<tr><td>68</td><td>CTCT</td><td>I</td><td>CTL counter mode select input H : 24H mode, L : 10H mode</td></tr>
<tr><td>69</td><td>CTLDI</td><td>I</td><td>CTL DISENABLE - Input signal to inactivate pin (63) BSCT
H : BSCT inactivated (CTL data is output when pin (84) BSGN is 'H'.)</td></tr>
<tr><td>71</td><td>XVTO</td><td>O</td><td>VITC output</td></tr>
<tr><td>72</td><td>VTGO</td><td>O</td><td>VITC gate signal output
H : VITC insertion line

</td></tr>
</table>

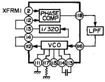
<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Description</th></tr>
<tr><td>82</td><td>LTCPHASE</td><td>I</td><td>LTC phase select input</td></tr>
<tr><td>83</td><td>LTCO</td><td>O</td><td>LTC output</td></tr>
<tr><td>84</td><td>BSGN</td><td>O</td><td>BUSY GENERATOR
Output in and around center of LTC SYNC WORD. Data access inhibited during this output</td></tr>
<tr><td>85</td><td>CPUWRZ</td><td>I</td><td>CPU write signal input
Signal input to get CPU to load data directly to XDI1–3</td></tr>
<tr><td>86</td><td>XDI3 (MSB)</td><td>I</td><td rowspan="4">Data input
Signal input for direct loading of 4 bits hexadecimal data such as time data, user's bit data, CTL data</td></tr>
<tr><td>87</td><td>XDI2</td><td>I</td></tr>
<tr><td>88</td><td>XDI1</td><td>I</td></tr>
<tr><td>89</td><td>XDI0 (LSB)</td><td>I</td></tr>
<tr><td>91</td><td>AD0</td><td>I/O</td><td rowspan="6">Address data input/output
· Address signal output to indicate output data
· Address signal input for data access to internal RAM and MPX.
<table>
<tr><th></th><th>TC</th><th>UB</th><th>RT</th><th>CTL</th></tr>
<tr><td>AD3</td><td>L</td><td>H</td><td>H</td><td>H</td></tr>
<tr><td>AD4</td><td>L</td><td>L</td><td>H</td><td>L</td></tr>
<tr><td>AD5</td><td>L</td><td>L</td><td>L</td><td>H</td></tr>
</table></td></tr>
<tr><td>92</td><td>AD1</td><td>I/O</td></tr>
<tr><td>93</td><td>AD2</td><td>I/O</td></tr>
<tr><td>94</td><td>AD3</td><td>I/O</td></tr>
<tr><td>95</td><td>AD4</td><td>I/O</td></tr>
<tr><td>96</td><td>AD5</td><td>I/O</td></tr>
<tr><td>97</td><td>XACS</td><td>I</td><td>Address line output enable
H : Address output terminals are OFF (high impedance)</td></tr>
<tr><td>98</td><td>XDO0 (LSB)</td><td>O</td><td rowspan="4">Data output (4 bits hexadecimal data)
Generation data or CTL data is output depending on mode.</td></tr>
<tr><td>99</td><td>XDO1</td><td>O</td></tr>
<tr><td>100</td><td>XDO2</td><td>O</td></tr>
<tr><td>101</td><td>XDO3 (MSB)</td><td>O</td></tr>
<tr><td>102</td><td>XDCS</td><td>I</td><td>Data line output enable
H : Data output terminals XDO0–3 getting high impedance</td></tr>
<tr><td>104</td><td>CPURDZ</td><td>I</td><td>CPU read signal input
Signal input to enable CPU to strobe output signal of XDO0–3</td></tr>
<tr><td>105</td><td>CLK7MO</td><td>O</td><td>7 MHz clock output (Inversion output of clock that pin (109) CKIN signal is half divided)</td></tr>
<tr><td>106</td><td>SLCK</td><td>I</td><td>Select clock input
To select CKIN frequency. L : 14.500 MHz, H : 7.250 MHz</td></tr>
<tr><td>108</td><td>XCKO</td><td>O</td><td>Clock output (Inversion output of pin (109) CKIN signal)</td></tr>
<tr><td>109</td><td>CKIN</td><td>I</td><td>System clock input (14.500 MHz)</td></tr>
<tr><td>111</td><td>INH1</td><td></td><td rowspan="8">
</td></tr>
<tr><td>112</td><td>VCOOUT</td><td>O</td></tr>
<tr><td>113</td><td>CIB</td><td>I</td></tr>
<tr><td>114</td><td>CIA</td><td>I</td></tr>
<tr><td>115</td><td>R2</td><td>I</td></tr>
<tr><td>116</td><td>VCOIN</td><td>I</td></tr>
<tr><td>117</td><td>R1</td><td>I</td></tr>
<tr><td>118</td><td>PHCOUT</td><td>O</td></tr>
</table>

Table 7-6-1 IC1 time code generator (VC2067A) pin functions

• Serial input signal

Each port of pins ㉒ to ㉕ of IC1 time code generator is supplied with 8-bit serial signal which is generated by converting parallel signal into serial signal by the multiplexers of IC7 to IC10. At that time, the multiplexers are controlled by LSBO, LSCO and LSDO outputs from pins ⑲ to ㉑ of IC1.

Table 7-6-2 shows four serial signals generated by the above process.

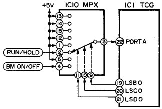
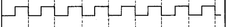
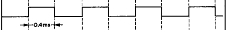
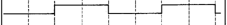
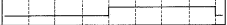


Fig. 7-6-4 Parallel-serial converter circuit

Pin No.	Signal Name		0	1	2	3	4	5	6	7
18	SCK O									
19	LSB O									
20	LSC O									
21	LSD O									
22	PORT A		TC/UB	UB/RT	TCUB/CTL	RT	UB	RESET	RUN/HOLD	BM
		H	$\boxed{\text{TC}}$	$\boxed{\text{UB}}$	$\boxed{\text{TC·UB}}$	$\boxed{\text{OFF}}$	$\boxed{\text{VITC}}$	$\boxed{\text{OFF}}$	RUN	OFF. (DIP SW 3-1)
		L	UB	REAL TIME	CTL	ON	LTC	ON	HOLD	ON
23	PORT B		SLAVE	SSEL 0	SSEL 1	SLEB	ERCLR	DLOD 1	DLOD 2	VITC
		H	OFF	$\boxed{\text{RESET}}$	RESET	2	OFF	DATA LOAD ↓	DATA LOAD ↓	E1 JP1
		L	ON	SET	$\boxed{\text{SET}}$	8	ON	(TC)	(UB)	E2
24	PORT C		AS 1	AS 2	AS 3	AS 4	AS 5	AS 6	AS 7	AS 8
		H	RESET	$\boxed{\text{RESET}}$ (CF)	RESET (BM)	$\boxed{\text{RESET}}$	$\boxed{\text{RESET}}$	$\boxed{\text{RESET}}$	4FIELD	FIELD1 INPUT
		L	SET	SET	SET	SET	SET	SET	$\boxed{\text{8FIELD}}$	
25	PORT D		SW1A	SW2A	SW3A	SW4A	SW1B	SW2B	SW2C	SW2D

SW1A/SW1B	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H
SW2A/SW2B	L	L	H	H	L	L	H	H	L	L	H	H	L	L	H	H
SW3A/SW3B	L	L	L	L	H	H	H	H	L	L	L	L	H	H	H	H
SW4A/SW4B	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H
VITC INSERTTON LINE No.	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7

Note 1: In the above table, indications in the box are always fixed in those conditions.

Note 2: Port C controls on/off of assinged bits. AS1 to AS6 are assigned to the following bits.

	LTC	VITC	Remark
AS1	10	14	Unassigned Bit
AS2	11	15	Color-lock Flag Bit
AS3	59	75	LTC Bi-phase Mark Phase Correction Bit or VITC Field Mark Bit (Settable by DIP switch SW3-1 on the DISPLAY board)
AS4	27	35	Binary Group Flag Bit
AS5	58	74	UNASSIGNED ADDRESS BIT
AS6	43	55	Binary Group Flag Bit

Table 7-6-2

TIME CODE GENERATOR

SA-R200E

INSTRUCTIONS

JVC SA-R200E
TIME CODE GENERATOR

JVC
VICTOR COMPANY OF JAPAN, LIMITED

Printed in Japan
PGD30002-439

PGD30002-439
(E)

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION:
To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTE:
The rating plate (serial number plate) is on the board.

CONTENTS

Installation
Controls And Operations
Time Code Setting
User Bit Setting
Specifications

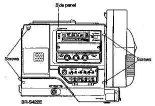
The SA-R200E is a time code generator board specifically designed for installation in the BR-S422E. EBU-standard LTC or VITC time code recording is possible. (LTC is recorded on the AUD-2 normal audio track.)

- The AEF switch should be set to "NORMAL" in the Rec Run mode, otherwise time code continuity will be lost at the edit point.
- If the time code has run for more than 30 minutes in the Free Run mode, it will keep running for at least 30 minutes even after the recorder's power is turned off.
- The SA-R200E can also be installed in the JVC GY-X2E colour video camera. For installation, consult a JVC service centre or authorised JVC service agent.

INSTALLATION

This section describes how to install the SA-R200E in the BR-S422E. For more details on installation, consult your local JVC service agent.

1. Remove the 4 screws from the side panel (controls and switches section of BR-S422E).



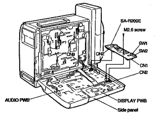
2. Open the side panel as illustrated.
3. Select the lines on which VITC data is to be inserted with the rotary switches SW 1/SW 2 on the SA-R200E.

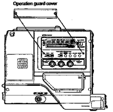
No. of switch	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Insertion line	7H	8H	9H	10H	11H	12H	13H	14H	15H	16H	17H	18H	19H	20H	21H	22H

Factory preset SW 1: C (19H)
SW 2: E (21H)

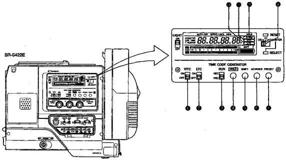
The BR-S422E is preset to add the AEQ (Automatic Equalizer) reference signal to line 11. Do not select line 11 for VITC insertion. If you want to defeat the AEQ signal or change its insertion line, consult a JVC service centre or authorised JVC service agent.

4. Attach the SA-R200E to the recorder by connecting the CN 1 connector on the SA-R200E to the CN 2 connector on the side panel's DISPLAY PWB and the CN 2 connector on the SA-R200E to the CN 9 connector on the side panel's AUDIO PWB. Secure them with the M 2.6 screw as illustrated.
5. Replace the side panel and fasten the four screws.
6. Remove the 2 screws from the operation guard cover and detach it to facilitate setting of the SA-R200E.





CONTROLS AND OPERATIONS



❶ VITC ON/OFF switch
ON: To record VITC time codes.
OFF: VITC time codes are not recorded.

❷ LTC ON/OFF switch
ON: To record LTC time codes. When set to this position, AUD-2 normal audio cannot be recorded.
OFF: LTC time codes are not recorded.

❸ REC RUN/FREE RUN switch
REC: The time code runs only during recording. (Rec Run mode; used to time the recording)
FREE: The time code runs in real time, regardless of the recorder's operating mode. (Free Run mode; used when operating in real time, as a clock)

❹ HOLD button
- Used when setting the time codes and user bits.

❺ SHIFT button
- Shifts the blinking digit to the right.

❻ ADVANCE button
- Advances the value of the blinking digit.

❼ PRESET button
- Transfers the data set with the HOLD, SHIFT, and ADVANCE buttons to the time code generator.

❽ UB/TC/COUNTER select switch
- Selects the display mode on the counter.

UB: Displays user bits.
TC: Displays time code data
COUNTER: Displays tape counter modes selected with the SELECT button.

❾ HOLD indicator
- Comes on when the HOLD button is pressed.

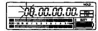
❿ VITC indicator
- Comes on when VITC is recorded.

⓫ LTC indicator
- Comes on when LTC is recorded.

TIME CODE SETTING

Either the current time or any required time can be set.

1. Set the ❸ REC RUN/FREE RUN switch as desired.
2. Set the ❽ UB/TC/COUNTER select switch to "TC".
3. Press ❹ HOLD for more than 2 seconds.
   - The counter resets with the leftmost digit blinking.
   - The HOLD indicator comes on.



4. Press ❻ ADVANCE.
   - This advances the value of the blinking digit. Set to the desired value.
5. Press ❺ SHIFT.
   - The blinking digit shifts to the right.
6. Repeat steps 4 and 5 until all data is set.

The maximum setting range is 23:59:59:24. Any value that exceeds this will be rejected.

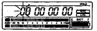
7. Press ❼ PRESET
   - The preset data will be transferred to the time code generator. The HOLD indicator goes off and the counter stops blinking.
   - In the Free Run mode, time code starts running.
   - In the Rec Run mode, time code starts running when the Record mode is engaged.

NOTES:
- When you want to correct the data, repeat steps 3 to 7.
- If you mistakenly press the HOLD button, press it again to cancel.

USER BIT SETTING

"User bits" is a portion of the time code signal allocated to the user. It can be used to record the operator number or reel numbers. User bits are an 8-digit hexadecimal number, each digit of which can have values from "0" to "F". User bits are recorded on the tape together with time data.

1. Set the ❽ UB/TC/COUNTER select switch to "UB".
2. Press ❹ HOLD for more than 2 seconds.
   - Counter shows "00 00 00 00" with leftmost digit blinking.
   - The Hold indicator will light.



3. Press ❻ ADVANCE to set the value of the blinking digit as desired.
   - All 8 digits can be changed from "0" to "F".
4. Press ❺ SHIFT to move the blinking digit.
5. Repeat steps 3 and 4 until all data is set.
6. Press ❼ PRESET.
   - The preset data will be transferred to the time code generator.
   - Hold indicator goes off and the counter stops blinking.
   - User bit data will not change regardless of the setting of the REC RUN/FREE RUN switch.

NOTES:
- When you want to correct the data, repeat steps 2 to 6.
- If you mistakenly press the HOLD button, press it again to cancel.

SPECIFICATIONS

Signal system : EBU-standard
Time set : 8 digits (hours, minutes, seconds, frames)
User bits : 8 digits
Power consumption : 0.05 W
Weight : approx. 30g
Provided accessory : M2.6 screw x 1

SECTION 1
DIAGRAM AND CIRCUIT BOARD

Refer to the following items and pages of the service manual for the BR-S422U (No. 9277).

(1) SCHEMATIC DIAGRAM	Page 4-38
(2) CIRCUIT BOARD	Page 4-39

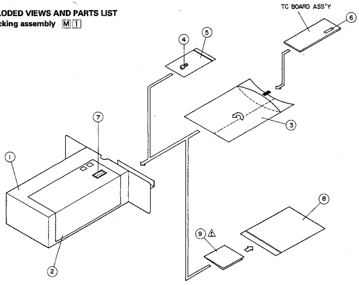
SECTION 2
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

2.1 EXPLODED VIEWS AND PARTS LIST

2.1.1 Packing assembly M 1



Packing assembly < M1 >

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
********	********	********************
	PACKING ASSEMBLY <M1>	
1	PRD30078	PACKING CASE
2	PRD30092-20	PACKING LABEL
3	PRD30413-01-04	AIR CAP BAG
4	SPSP2606Z	SCREW
5	QPGB005-00704	POLY BAG
6	PRD30072-66	STICKER
7	PUP40329	SERIAL NO.STICKER
8	QPGB010-01404	POLY BAG
⚠ 9	PGD30002-439	INSTRUCTION SHEET

SECTION 3
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the △ symbol are critical for safety. Replace only with specified part numbers.

TIME CODE GENERATOR BOARD ASSY < 09 >

#△ REF No.	PART No.	PART NAME, DESCRIPTION	

****

TIME CODE GENERATOR BOARD ASSY < 09 >

PWBA	PRK20168B-03	TC GENERATOR BOARD ASSY, PAL	
IC1	VC2067A	IC	
IC2	TC4021BF	IC	
IC3	TC4021BF	IC	
IC6	TC4S69F	IC	
IC7	TC74HC08AF	IC	
IC8	TC4051BF	IC	
IC9	TC4051BF	IC	
IC10	TC4051BF	IC	
IC11	TC4051BF	IC	
Q1	DTC144EU	TRANSISTOR	
R1	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R2	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R3	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R4	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R5	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R6	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R7	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R8	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R9	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R10	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R11	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R12	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R14	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R15	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R16	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R17	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R18	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R19	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R20	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R21	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R22	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R23	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R24	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R25	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R26	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R27	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R28	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R29	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R30	NRSA63J-104N	RESISTOR	100KΩ,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R31	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R32	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R33	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R34	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R36	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R37	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R38	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R39	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R40	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R48	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R51	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R52	NRSA63J-224N	RESISTOR	220KΩ,1/16W
R53	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R54	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R55	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R56	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R57	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R58	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R59	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R60	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R61	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R62	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R63	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R64	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R65	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R66	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R67	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R68	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R69	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R70	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R71	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R72	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R73	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R74	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R75	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R76	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R77	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R78	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R80	NRSA63J-333N	RESISTOR	33KΩ,1/16W
R81	NRSA63J-104N	RESISTOR	100KΩ,1/16W
R82	NRSA63J-0R0N	RESISTOR, PAL	0Ω,1/16W
R83	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R84	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R85	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R86	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R87	NRSA63J-0R0N	RESISTOR	0Ω,1/16W

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#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C1	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C2	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C3	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C4	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C5	NCS31HJ-120A	CAPACITOR	12PF,50V
	C6	NCB31HK-332A	CAPACITOR	0.0033μF,50V
	C7	NCS31HJ-270A	CAPACITOR	27PF,50V
	C8	NCS31HJ-100A	CAPACITOR	10PF,50V
	C9	NCB31HK-222A	CAPACITOR	0.0022μF,50V
	C10	QERF1EM-475	E CAPACITOR	4.7μF,25V
	C13	QEA40HZ-105	E CAPACITOR (DOUBLE)	1F,5.5V
⚠	C14	QCF11HP-103	CAPACITOR, PAL	0.01μF,50V
⚠	X1	PGZ01103	CRYSTAL RESONATOR, PAL	
	SW1	QSR0096-L03	ROTARY SWITCH, VITC LINE SEL	
	SW2	QSR0096-L03	ROTARY SWITCH, VITC LINE SEL	
	TP1	PGZ01015	TEST PIN, X5(TP1-3,5,7)	
	CN1	PGZ01715-050	CONNECTOR	
	CN2	YU40772-12	CONNECTOR	

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